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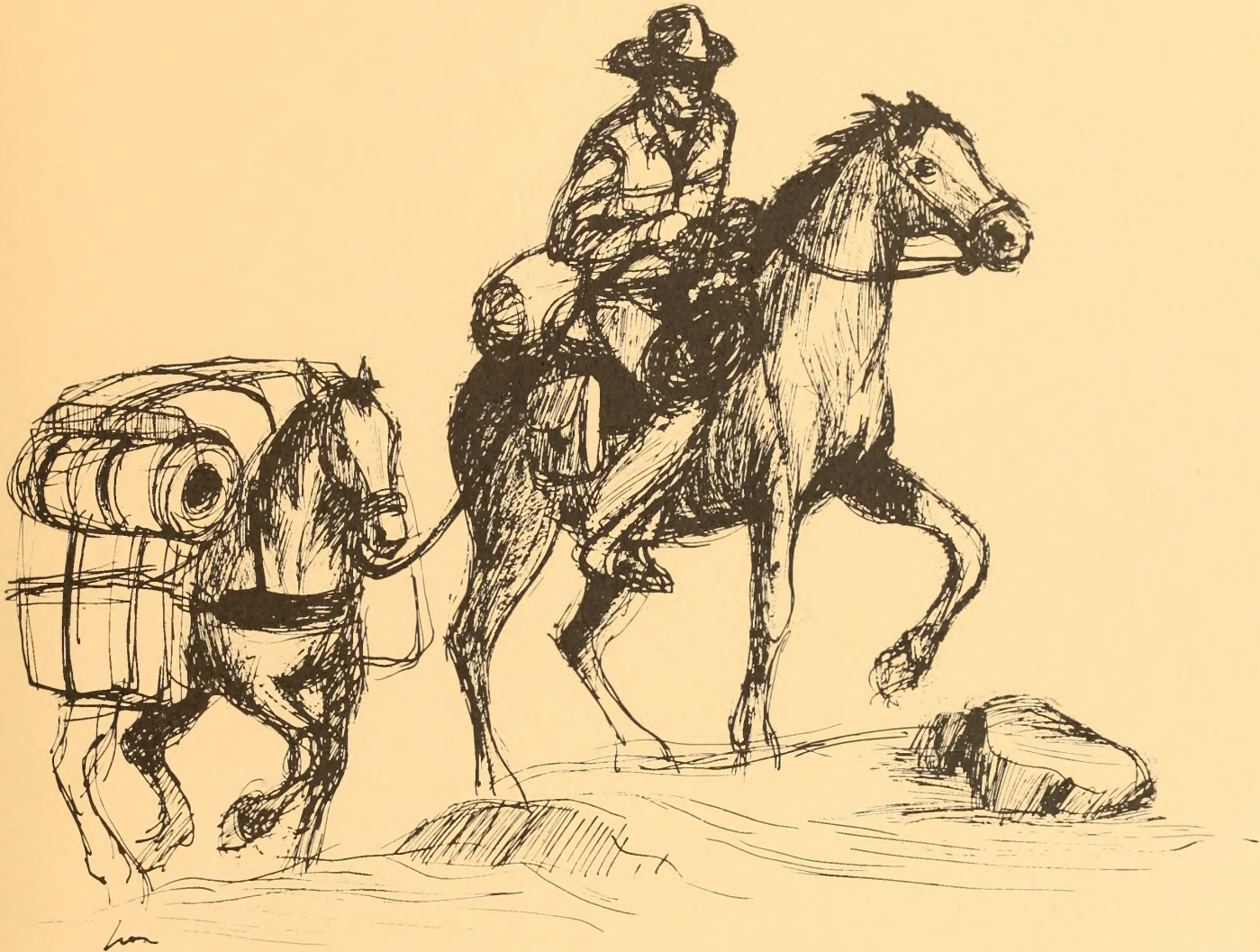


U.S. Department of the Interior, Bureau of Land Management
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APPENDIX 1

RIO CHAMA WSA (NM-010-059)

SECTION 1 GENERAL DESCRIPTION

NAME CHANGE

The name of this wilderness study area (WSA) has been changed from the Navajo Peak WSA to the Rio Chama WSA. This name change should reduce the confusion to the general public about the WSA's location by directing attention to its primary natural feature.

LOCATION

The Rio Chama WSA is located in Rio Arriba County, New Mexico, approximately 3.5 air miles south of El Vado, New Mexico (Map 1). The WSA is included on three USGS topographical maps--the Boulder Lake Quadrangle, the Tierra Amarilla Quadrangle, and the Navajo Peak Quadrangle.

CLIMATE AND TOPOGRAPHY

The Rio Chama WSA is composed of a combination of gently rolling grass and sage plains bordered by dense ponderosa stands and the northern portions of Gallina Peak. The WSA is bisected on a north-south line by the Rio Chama, which meanders through a 900-foot-deep canyon. The WSA ranges in elevation from 6,600 feet (2,200 meters) to 7,500 feet (2,500 meters).

The mean annual temperature for the Navajo Peak region is 44° F (6.6° C). The average annual temperature ranges from 84° F (29° C) during the summer months to 4° F (-16° C) in the winter. July is usually the warmest month and January the coldest.

Annual precipitation ranges from 14 to 16 inches (36 - 41 centimeters). Precipitation is a result of both snowpack and seasonal rainfall.

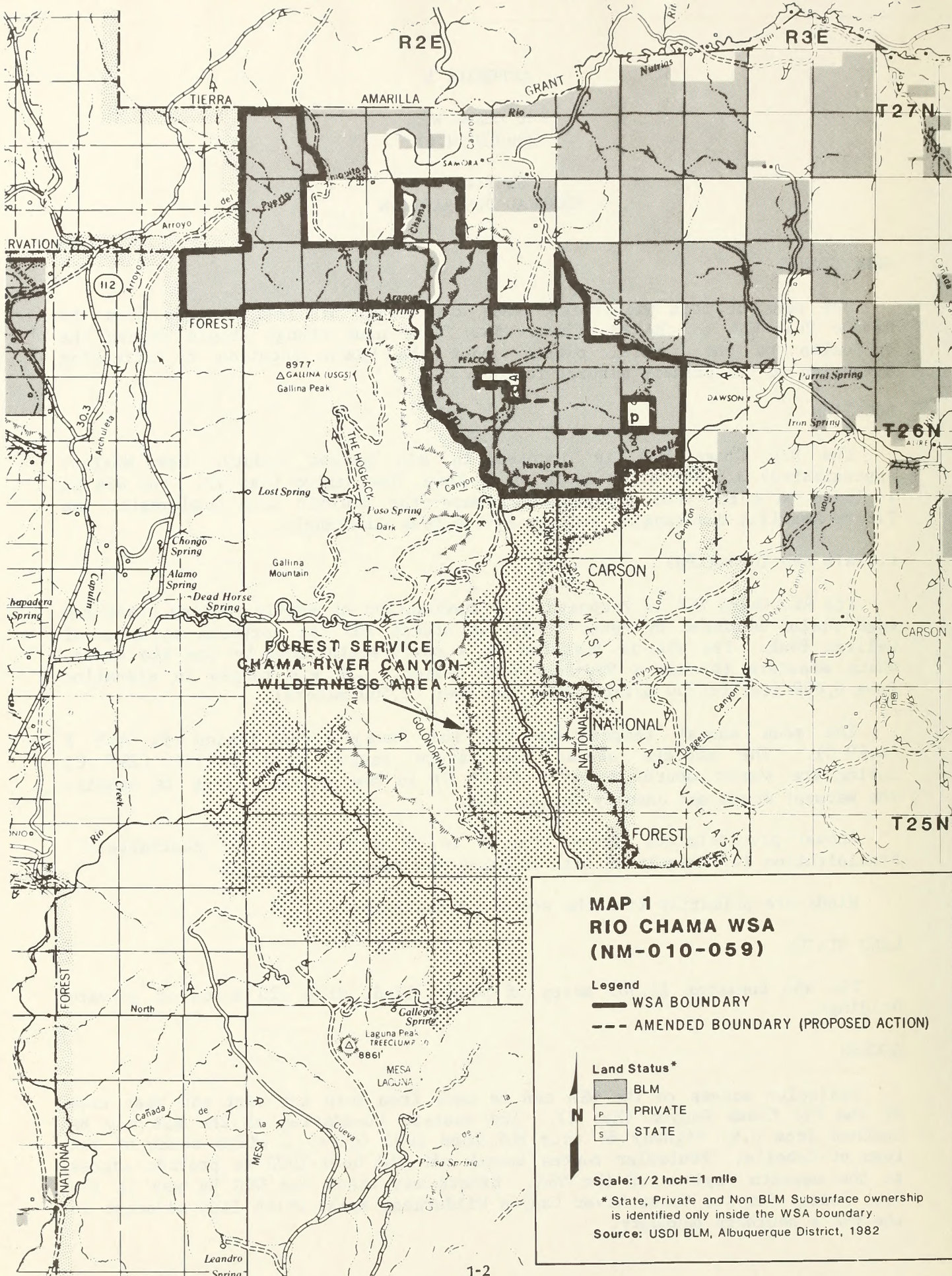
Winds are primarily from the south and southwest.

LAND STATUS

The WSA contains 11,985 acres of public land, with 320 acres of private holdings.

ACCESS

Vehicular access to the WSA can be made from both the east and west side of the Rio Chama Canyon (Map 2). The eastern boundaries of the WSA may be reached from U.S. Highway 84 onto BLM Road 1023 (dirt) 2 miles south of the town of Cebolla. Vehicular routes branch off BLM Road 1023 to provide access to the eastern regions of the WSA. Hikers may reach the WSA by way of the U.S. Forest Service Chama River Canyon Wilderness Area, which lies adjacent to the WSA's southern boundary.



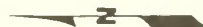
R1E | R2E | R3E

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T26N

R1E | R2E

**MAP 2
RIO CHAMA WSA
(NM-010-059)
ACCESS**

- WSA BOUNDARY
- - - UNPAVED ACCESS ROUTE
- - - AMENDED BOUNDARY



0 1/2 1 Miles
Scale

Vehicular access to the western boundaries of the Rio Chama WSA is provided through the Santa Fe National Forest from New Mexico State Road 112 heading north from Arroyo Blanco. This route presently provides the primary public access to the western portions of the WSA.

The alternative ingress to the WSA is via boat on the Rio Chama. The present put-in point for boaters is at the privately owned El Vado Fishing Ranch, which is located just south of El Vado Dam off of New Mexico State Road 112.

PROPOSED ACTION, ALTERNATIVES, AND ISSUES

A detailed description of those actions associated with the proposal and the alternatives is provided in Table 1.

A summary of the significant environmental impacts by alternative for each of the identified major environmental issues is provided in Table 2.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Wilderness
<ul style="list-style-type: none"> o Manage 11,985 acres as wilderness. - Close 22 miles of vehicular ways. - Prepare joint Wilderness Management Plan with Santa Fe National Forest to manage combined area. - Permits required for commercial boating. - Require permits for vehicle access to eight dirt stock tanks. - Attempts would be made to acquire 320 acres of private inholdings. 	<ul style="list-style-type: none"> o Manage 5,232 acres as wilderness. - Close six (6) miles of vehicular ways. - Prepare joint Wilderness Management Plan with Santa Fe National Forest to manage combined area. - Permits required for commercial boating. o Manage 6,753 acres without wilderness protection. - Vehicle use would not be restricted on 16 miles of vehicle ways. - Attempts would be made to acquire 120 acres of private lands. - Permits would not be required for vehicle access to four dirt tanks. 	<ul style="list-style-type: none"> o Manage 11,985 acres without wilderness protection. - Vehicle use would be allowed to continue. - Prepare joint River Management plan with the Santa Fe N.F. to manage the Rio Chama. - Permits required for commercial boating.

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Major Environmental Issues Wilderness Values
All Wilderness (11,895 acres)	Wilderness protection would maintain the area's high quality wilderness values, both along the river and the grasslands above the canyon.
Amended Boundary (5,232 acres) (Proposed Action)	Wilderness protection would maintain the values in the canyon corridor where the highest quality wilderness values exist.
No Wilderness (11,985 acres)	Without wilderness designation, wilderness values in the Chama Canyon would probably be retained in the foreseeable future. Naturalness outside the canyon would probably be degraded from oil and gas exploration and woodcutting.

SECTION 2

EXISTING RESOURCES

GEOLOGY

The Rio Chama WSA is located in the eastern portion of the Gallina Fault Zone, a north- and northwest-trending, strongly faulted series of dome-type structures that extend some 25 miles from the Tierra Amarilla Grant (northern boundary of the WSA) to the Rio Arriba-Sandoval county line. The fault is a southern extension of the Archuleta Arch, which extends some 40 miles to the Archuleta Mesa, on the Colorado-New Mexico line. Together, the two structures form the boundary between the San Juan Basin (west) and the Chama Basin (east).

The WSA is characterized by a surface cover of eastward-dipping Cretaceous sediments (Mancos and Dakota Formations) that have been frequently interrupted and offset by faulting. In the western portion of the WSA, erosion by the Rio Chama has resulted in a spectacular gorge up to 900 feet deep that has exposed the underlying Morrison Formation (Jurassic) on the canyon walls. Quaternary alluvium has been deposited on the canyon floor.

While no pre-Morrison rocks have been exposed in the WSA, outcroppings of lower Mesozoic (lower Jurassic and Triassic) and upper Paleozoic (Permian through Mississippian) rocks elsewhere along the Rio Chama and Gallina Fault would seem to indicate that the same rock types underlie the WSA. It is also thought that both the Pennsylvanian and Mississippian rocks overlie Precambrian igneous/metamorphic complexes.

The Gallina Fault is believed to have begun to move shortly after the close of the Cretaceous deposition and appears to have been the axis of an arch. This is evidenced by the thinner sequence of Cretaceous sediments in the Chama Basin as opposed to the San Juan Basin.

While no detailed paleontological inventory has been conducted in the Rio Chama WSA, the presence of known fossil-bearing rocks (particularly the Morrison Formation), indicates a fair to good potential exists for the discovery of paleontological resources.

WATER

The WSA lies within the Rio Chama drainage, bounded on the north by the Rio Nutrias and the south by the Rio Cebolla, which both feed into the Rio Chama from the west. The surface is rolling, bisected by arroyos flowing into these drainages. The west side, along the Rio Chama, is steep (greater than 20 percent slope) and highly eroded.

The flow of the Rio Chama has seasonal variations that are modified by upstream releases from the El Vado Reservoir. During the late summer through early spring, flows are moderate (100-500 cubic feet per second—cfs). During the spring snowmelt, the flow is high (up to 5,000 cfs).

Occasional summer thunderstorms will cause Rio Chama tributaries to flow with heavy sediment and dissolved solids which degrade the quality of water in the Rio Chama.

All surface water from the Rio Chama and its tributaries should be purified for domestic consumption.

Springs are reported to exist within the WSA, but they have not been confirmed. Two hot springs are located on private land north of the WSA boundary along the Rio Chama.

SOILS

Soil types in the WSA are grouped into two associations. The Las Lucas-Little-Persayo Association occurs east of the Rio Chama Canyon rim on gently to strongly sloping and rolling uplands. Although slopes are predominantly less than 20 percent, some of the Persayo soils occupy hilly landscapes with slopes up to 25 percent. In addition, escarpments and break areas consisting of outcrops of shale and sandstone are commonly steep to very steep. The soils, which are light to moderately light colored, calcareous, and highly erodible, are forming predominantly in materials weathered from gray- and olive-colored shales. They support fair to good stands of vegetation.

The Rock Land-Rough Broken Land Association, along the Rio Chama and below the canyon rim, is characterized by rough and broken topography. This topography includes escarpments, steep canyon walls, rocky ridge tops, rock slides, rock ledges, and steep breaks, all of which are dominated by rock outcrops and small areas of highly variable soils. The exposed bedrock consists of sandstone, shale, tuff, basalt, quartzite, and granite. Those parts of this association with outcrops of tuff, basalt, and sandstone contain vertical or near-vertical, precipitous cliffs and escarpments that surround many of the mesas to form colorful canyon walls along the Rio Chama and tributaries.

VEGETATION

Within the Rio Chama WSA, a unique diversity of vegetation types exists. They vary from ponderosa pine forests, to riparian vegetation, to a northern cold desert grassland. (The permanent documentation file located at the BLM Taos Resource Area Office contains a vegetation type summary of the WSA.)

The potential natural vegetation according to Bailey-Kuchler would be divided into three types: Pine-Douglas Fir, Pinyon-Juniper Woodlands, and Great Basin Sagebrush. The vegetation type along the rim and above the Rio Chama has a unique development of ecological successional stages. Along the rim the ponderosa pine (Pinus ponderosa) type predominates. Within the understory of the ponderosa pine type is a sub-canopy of mountain shrubs, including oakbrush (Quercus gambelii), serviceberry (Amelanchier spp.),

currant (Ribes spp.), and mountain mahogany (Cercocarpus montanus). This understory is an ecotone to the pinyon juniper vegetation type.

The pinyon (Pinus edulis) and juniper (Juniperus spp.) are in dense stands where the contact is with the ponderosa pine type. The subcanopy of pinyon-juniper vegetation type contains sagebrush (Artemisia spp.) and native grasses, including bluegrama (Bouteloua gracilis), Indian ricegrass (Oryzopsis hymenoides), and side-oats grama (Bouteloua curtipendula).

The pinyon-juniper type melds to the sagebrush type. The sagebrush is the most prevalent vegetation type. The understory contains the same grasses as found in the pinyon-juniper type. During the late 1950's, 1960's, and early 1970's a program of vegetative manipulation was initiated. Large scale sagebrush clearing and subsequent planting of crested wheatgrass (Agropyron cristatum) was completed. On Map 3, the cross-hatched areas indicate where vegetative modification has been applied, covering approximately 42 percent of the Rio Chama WSA.

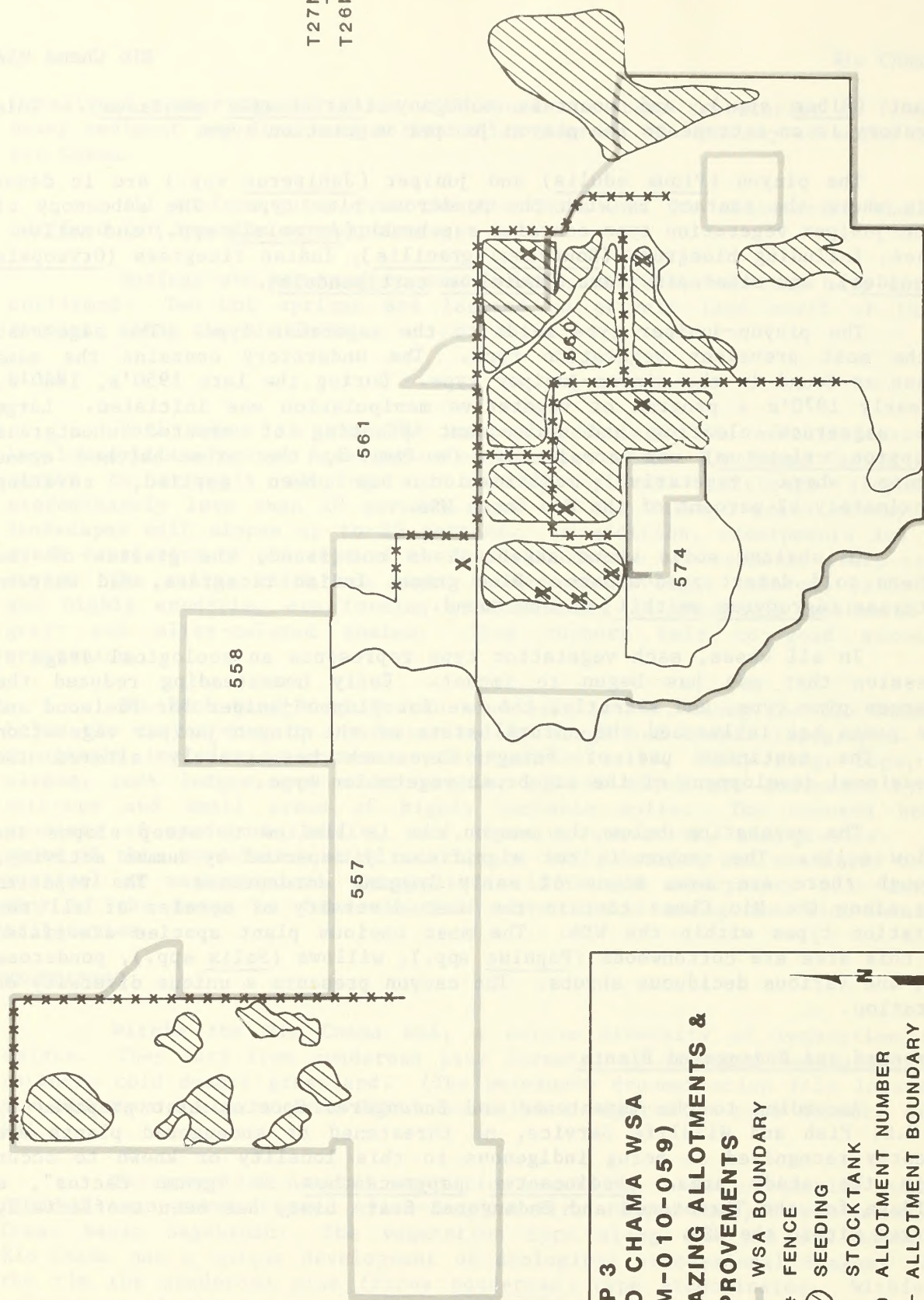
On shallow soils where sagebrush is not found, the grasses of the northern cold desert predominate. Blue grama, Indian ricegrass, and Western wheatgrass (Agropyron smithii) can be found.

In all cases, each vegetation type represents an ecological stage of succession that man has begun to impact. Early homesteading reduced the ponderosa pine type, and recently, the use for pinyon-juniper for fuelwood and fence posts has influenced the natural state of the pinyon-juniper vegetation type. The continued use of forage livestock has greatly altered the successional development of the sagebrush vegetation type.

The vegetation below the canyon rim is limited to steep slopes and shallow soils. The canyon is not significantly impacted by human activity, although there are some signs of early logging enterprises. The riparian areas along the Rio Chama contain the most diversity of species of all the vegetation types within the WSA. The most obvious plant species associated with this area are cottonwoods (Populus spp.), willows (Salix spp.), ponderosa pine, and various deciduous shrubs. The canyon presents a unique diversity of vegetation.

Threatened and Endangered Plants

According to the Threatened and Endangered Species List prepared by the U.S. Fish and Wildlife Service, no threatened or endangered plants are presently recognized as being indigenous to this locality or known to occur within the study area. Pediocactus papyracanthus or "grama cactus", a candidate for the Threatened and Endangered State List, has been unofficially reported within the WSA.



**MAP 3
RIO CHAMA WSA
(NM-010-059)
GRAZING ALLOTMENTS &
IMPROVEMENTS**

— WSA BOUNDARY

*** FENCE

SEEDING

X STOCK TANK

550 ALLOTMENT NUMBER

— ALLOTMENT BOUNDARY

0 1/2 1 Miles
Scale

WILDLIFE

There are several habitat types associated with the vegetation types discussed in the previous section.

The pinyon-juniper and sagebrush types are intertwined by many fingerlike projections that provide an extensive edge effect between the two vegetation types. The high density pinyon-juniper types lie adjacent to the Rio Chama canyon with the sagebrush type lying to either side of the pinyon-juniper band. Some of the areas show heavy forage utilization, with extensive livestock use of browse species such as oakbrush and mountain mahogany, which support the mule deer in the area. Other species using the areas above the canyon rims include elk, black bear, coyote, and turkey.

The canyon area contains a greater diversity of plant species, excellent cover, and many cliff areas for birds of prey and cavity-nesting birds than does the rim area. This area provides excellent habitat for a wide variety of large mammals (mule deer, elk, and mountain lion), small mammals (bobcat, beaver, and raccoon), avian species (wintering bald eagle, red-tailed hawk, American kestrel, prairie falcon, golden eagle, and Cooper's hawk) and reptiles.

The riparian areas along the Rio Chama augment the habitat diversity of the Rio Chama Canyon and show considerable use by large mammals, passerine birds, aquatic associated mammals and waterfowl.

The aquatic habitat contains a brown and rainbow trout fishery, and populations of native minnows and suckers. The instream cover is provided primarily by large, deep pools, and large boulders. The river is predominantly pools with only 20 to 25 percent riffles. The stream bank vegetation is less than optimal due to domestic livestock grazing.

Of the verified significant species, the majority fall within the harvest species category. Recovery species include those discussed under threatened and endangered species. A taxonomic list of probable fauna species which either reside or frequent the area and comprise the remainder of the ecosystem maintenance species is available at the Taos BLM Office.

Threatened and Endangered Animals

The threatened or endangered animals confirmed to frequent the area include the federal and state protected bald eagle and peregrine falcon. The black-footed ferret is listed by the U.S. Fish and Wildlife Service but no extensive prairie dog towns exist within the WSA to support the threatened species. The State protected osprey and marten are also considered species which may use the area.

VISUAL RESOURCES

The topographic relief is divided into three types - flat, open plain, rolling foothills and the deep river canyon of the Rio Chama. Vegetation varies from lush riparian habitat in the Rio Chama Canyon, to sagebrush and grasses on the open plains, to pinyon-juniper and ponderosa pine in the foothills and higher elevations. Landscape colors within the canyon are light and dark greens from the vegetation and brilliant reds, browns, and orange from the canyon walls. The area above the canyon rims is predominantly green, gray, and brown with some variations in the distant background. The overall feeling is one of open expanse above the canyon rims and extreme solitude and isolation within the confines of the Rio Chama Canyon.

The Rio Chama Scenic Quality Rating Unit is rated as Visual Resource Management Classes II and III. The Class II designation for the Rio Chama Canyon indicates that any change in the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape. The areas above the rims of the canyon gorge are rated Class III which denotes that any changes in the basic elements caused by management activity may be evident, but should remain subordinate to the visual strength of the existing character. However, the entire WSA is to be managed as a Class II while under the wilderness review due to the nonimpairment criteria.

CULTURAL RESOURCES

The WSA has had no systematic cultural survey. However, surveys in the surrounding two archaeological districts have recorded high densities of archaeological sites. The same pattern is expected in the Rio Chama WSA. Based on the review of reported archaeological research in the Chama and Gallina Archaeological Districts, the WSA is expected to contain remains from the PaleoIndian, Archaic, Prehistoric Pueblo periods. This suggests that a cultural inventory of the WSA would reveal a significant array of cultural resources documenting the cultural development of the region for over 3,000 years. Historic homestead sites have also been identified within the Rio Chama Canyon.

AIR QUALITY

Due to the remoteness of the WSA from any sources of air polluting emissions, the air quality in the WSA is considered good to excellent.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

Energy Minerals

Leasable

No drilling activity has occurred within the Rio Chama WSA. However, 64 percent of the WSA has been leased for oil and gas development (refer to Map 4) and the U.S. Geological Survey has rated it as being prospectively valuable for oil and gas. The WSA is only about 5 miles northeast of the producing Puerto Chiquito Oil and Gas Field, however, the WSA does not seem to contain favorable host rocks. Consequently, the potential for petroleum products in the WSA, as shown in Table 3, is concluded to be low.

Some coal may be present in small amounts in the Dakota Formation. The only major coal-bearing formation in the vicinity, the Menefee Formation (Upper Cretaceous), does not occur within the Rio Chama WSA. Consequently, the potential for coal development is considered to be very low (refer to Table 3).

Locatable

A great deal of uranium exploration has taken place in the vicinity of, and possibly within the Rio Chama WSA. Some small uranium occurrences have been found in the region, often associated within organic matter (e.g., bones and plant debris), but no uranium occurrences have been reported in the WSA. While there does not appear to be a very high potential for the discovery of large uranium deposits in the Rio Chama WSA, the presence of the Burro Canyon (Cretaceous), Morrison (Jurassic), and Chinle (Triassic) Formations in the WSA, all known to contain uranium elsewhere, warrants a more detailed study before a conclusion can be made as to the potential for uranium occurrence (refer to Table 3).

Non-Energy Minerals

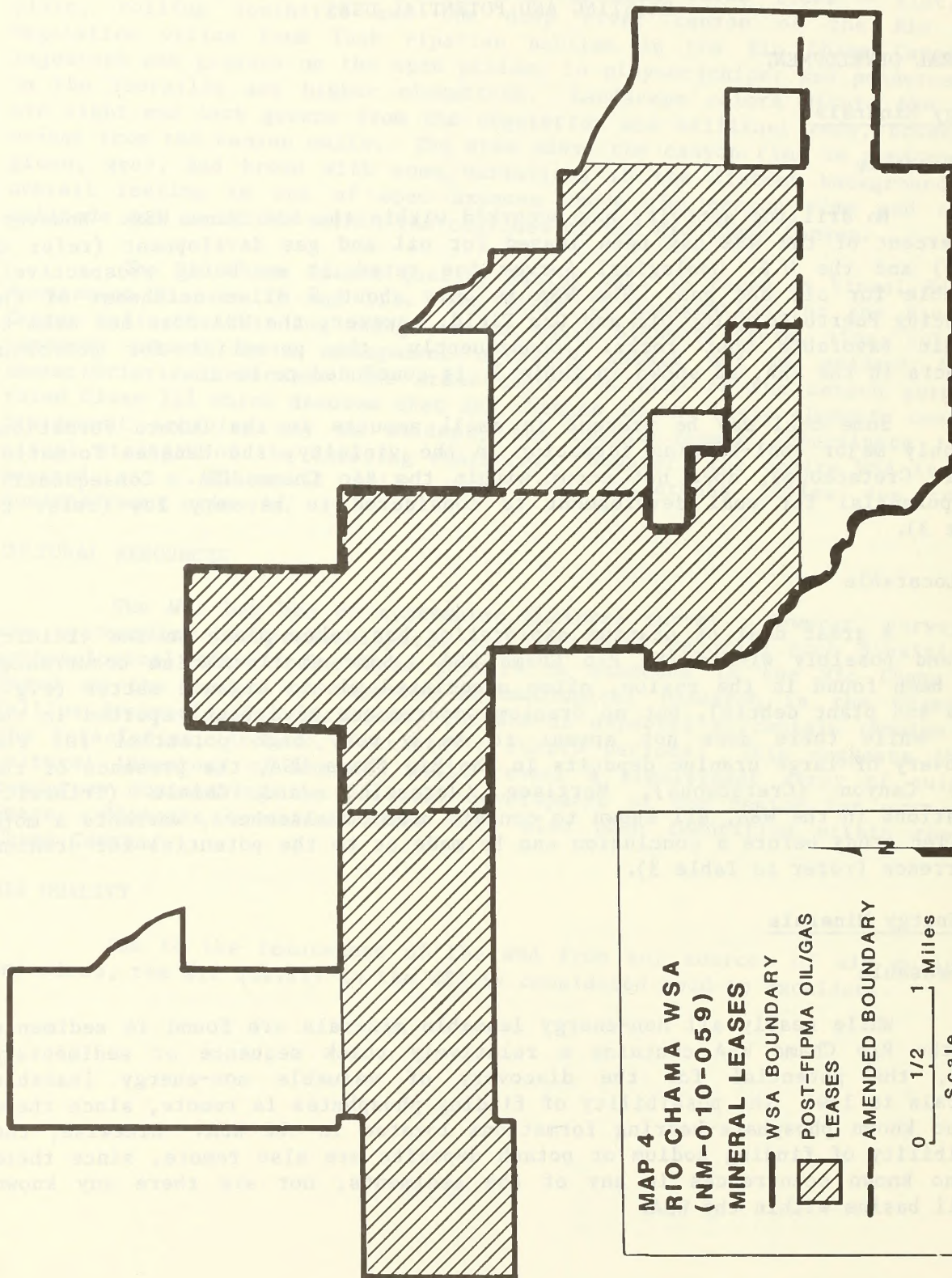
Leasable

While nearly all non-energy leasable minerals are found in sediments and the Rio Chama WSA contains a relatively thick sequence of sedimentary rocks, the potential for the discovery of valuable non-energy leasable minerals is low. The possibility of finding phosphates is remote, since there are no known phosphate-bearing formations located in the WSA. Likewise, the possibility of finding sodium or potash deposits are also remote, since there are no known occurrences in any of the sediments, nor are there any known alkali basins within the WSA.

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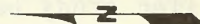


MAP 4
RIO CHAMA WSA
(NM-010-059)
MINERAL LEASES

— WSA BOUNDARY

▨ POST-FLPMA OIL/GAS
LEASES

- - - AMENDED BOUNDARY



0 1/2 1 Miles
Scale

TABLE 3
MINERAL POTENTIAL
RIO CHAMA WSA

Commodity	Associated Environment	Mineral Potential	Acreage ^{a/}
Coal	Dakota Formation	Low	NC
Uranium	Burro Canyon Formation	Low	NC
	Morrison Formation	Low	NC
	Chinle Formation	Low	NC
Copper, Lead Zinc, Molybdenum	Precambrian igneous/metamorphic complex	Low	NC
Sandstone	Dakota Formation	Low	NC
Sand, gravel	Quaternary alluvium	Low	NC
Oil & Gas	Mesozoic, Paleozoic Marine and Continental sedimentary rocks	Low	NC

Source: Tecolote Corp. 1981. Taos Mineral Resource Inventory.

^{a/} Acreages on areas of low potential were not calculated (NC).

Locatable

At present, there is no activity in the Rio Chama WSA pertaining to locatable non-energy minerals. There are no mining claims located in the immediate area and there has been no known exploration or development attempts. There may be a slight chance of finding "red bed" copper deposits (i.e., copper carbonates) in the Triassic Chinle Formation, since these deposits have been found in the Chinle elsewhere. However, the probability of finding other locatable mineral deposits in the sedimentary rock sequence seems low, since there are no igneous intrusions (which would bring mineral-rich solutions) and no apparent mineralization occurring along the various fault planes. Therefore, it is concluded that the potential for valuable mineral deposits in the sediments is low (refer to Table 3).

There is a possibility of finding massive sulfides (e.g., copper, lead, zinc, molybdenum) in the Precambrian igneous/metamorphic complex that underlies the WSA. However, more data would be required before an evaluation of the potential occurrence of massive sulfides can be made.

Salable

Even though most of the sediments found in the WSA are friable sandstones and shales, easily eroded and not very cemented, they are not considered to be very good sources of aggregate. The Precambrian igneous/metamorphic rocks are too deep to have very much potential as a source of salable minerals. The alluvium found in the Rio Chama is too inaccessible to be considered as a potentially valuable source of mineral materials.

WATERSHED

Several water catchments are the only structures for water control within the WSA. Water from the Rio Chama and its tributaries are utilized by livestock and wildlife.

In the event the Abiquiu Reservoir, located downstream from the WSA, increases its storage capacity the flow of the Rio Chama may be affected. More frequent releases of water from El Vado Reservoir during the late summer would result. Consequently, the flow would be higher than normal for that time of year.

LIVESTOCK GRAZING

The WSA encompasses five livestock (cattle) grazing allotments. The primary use period is spring-summer-fall with no use in winter due to snow pack. Allotment Management Plans have been completed on two allotments (a file copy is available at the BLM Taos Resource Area Office).

The range improvements within the WSA are extensive (see Map 3 in Section 2 of this appendix). Many existing fences originally built to aid the sage clearing and reseeding projects are being scheduled for removal. A summary of the existing range allotments is found in Table 4.

TABLE 4

RANGE ALLOTMENT SUMMARY

Allotment Name	Number	Number of Head	<u>Season of Use</u>		Animal Unit Months
			Start	End	
Hibner AMP IIA ^{a/}	0560	86	10/26	12/31	875
Puerto Community	0557	208	5/1	10/31	961
Esperanza Grazing Association ^{a/}	0561	345	4/16	10/15	2,070
Jones	0558	16	3/1	10/30	120
Peacock Place	0574	20	4/1	7/1	36

Source: Allotment files, Taos Area Office, BLM.

Note: ^{a/} AMP Allotments.

FOREST PRODUCTS

The Rio Chama WSA contains commercial and non-commercial woodlands. The commercial supply consists primarily of ponderosa pine. There are approximately 350 acres with potential total production of up to 50,000 board feet. There are approximately 1,500 acres of pinyon-juniper non-commercial woodlands with a total potential fuelwood market for approximately 15,000 cords.

Favorable topography has allowed for selective cuttings for timber sales in the past. An additional 80 acres of thinning, for enhancement of timber production, and 100 acres of clearcutting for mistletoe eradication, were performed within the WSA prior to 1975.

Three forestry study plots are located within the boundaries of the WSA. These study plots have been used to monitor overall timber production for potential future timber sales.

The 1979 Rio Grande Management Framework Plan does not recognize the potential use of areas within the Rio Chama WSA for future timber harvest. No specific plans for issuing sales or permits are being considered at the present time.

RECREATION

A 30-mile segment of the Rio Chama, immediately below El Vado Reservoir to the headwaters of the Abiquiu Reservoir, was designated in 1978 by the New Mexico State Legislature as a "Scenic and Pastoral River". The portion of the WSA within the Rio Chama "Scenic and Pastoral River" was floated by over 1,500 people during the 1983 river season. These were primarily one night trips. Floating, camping, fishing, and hiking are the primary recreation activities occurring within this river corridor, resulting both from these trips and from other users. Hikers and backpackers from the adjacent U.S. Forest Service Chama River Canyon Wilderness Area also utilize portions of the WSA, especially along the Rio Chama.

Very little recreation activity occurs above the rims of the Rio Chama gorge in the WSA. Some hunting activity is apparent from old hunting camps found in some of the pinyon-juniper stands. The Rio Chama WSA is within New Mexico Game and Fish Management Unit #5. The permanent documentation file has a listing of elk and mule deer hunting pressure, harvest and success for 1980 and 1981. Fishing use is also quantified for the Rio Chama.

EDUCATION/RESEARCH

The U.S. Fish and Wildlife Service is presently conducting a study to determine fishery and riparian habitat on the Rio Chama.

The Bureau of Land Management and U.S. Forest Service have a cooperative agreement in effect for the study of the commercial and private boating use on the Rio Chama. Recommendations for use allocation and protective management were in effect for the 1984 river use season.

The Rio Chama is one of only two floatable streams in New Mexico and represents a unique educational opportunity for study of a river environment from the confines of the river itself. Many educational entities (University of New Mexico, New Mexico State University, Santa Fe Mountain Center, Albuquerque Public Schools, Boy and Girl Scout Organizations) have conducted environmental education excursions on the Rio Chama for the study of this unique biological ecosystem.

NATIVE AMERICAN USES

No areas currently of religious significance to Native Americans are known within the study area. Shrines constructed by prehistoric populations probably do occur throughout the area.

REALTY ACTIONS

No rights-of-way, withdrawals, easements, or permits exist in this WSA. Two parcels of private land occur within the boundaries of the WSA to which reasonable access must be provided.

WILDLIFE

The portion of the Rio Chama which is within the WSA provides a suitable habitat and food base for the river otter. The potential for introduction of the river otter is dependent upon the amount of privacy and protection the species would receive. It may be necessary to restrict, as well as inform, boaters if such a project was implemented. Currently, there is no official recommendation.

The sage grouse is a state-protected bird because the northwestern portion of New Mexico is at the periphery of the bird's range. The sagebrush plain found within the WSA, above the Rio Chama, is characteristic habitat for the sage grouse. Therefore, the sage grouse may also be a potential candidate for introduction. If introduction took place, restrictions on vehicle and human activity would need to be considered. Introducing the sage grouse to the Rio Chama WSA is theoretical at this time.

No Habitat Management Plan is scheduled to be written by fiscal year 1986. If a Habitat Management Plan were to be prepared, the Rio Chama WSA would be intensively inventoried and other potential uses would be more accurately identified.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

The Rio Chama within the WSA is very natural in character. The amount and degree of impacts affecting the naturalness of the area are distinctly divided between the Rio Chama Canyon and the open range above its rims.

The Rio Chama Canyon provides the most distinctive indications of naturalness throughout the WSA. (Refer to Figures 1 through 4.) The views and vistas in and directly above the canyon give one a true feeling of naturalness. Most intrusions are hidden by the canyon walls and are therefore not noticeable from the Rio Chama.

The river canyon is contrasted with the open range topography above. Impacts of human activities are more visible and apparent above the canyon rims. Visible impacts include range improvements (e.g., windmills, catchments, seedings, fencelines), vehicular routes, private homes and ranch operations, and utility lines. The private inholdings in the WSA are all located outside the Rio Chama Canyon.

The most noticeable impacts in the WSA are the 20 miles of existing vehicular routes, used primarily for access to range improvements requiring maintenance on an annual basis (see Map 3 in Section 2). Some of the routes are also to access hunting, camping, and fishing in the Rio Chama Canyon area.

The presence of man-made intrusions above the canyon in the WSA detract from the natural qualities of the area. The cumulative effects of these impacts is minimal in the canyon. During the Wilderness Inventory, it was difficult to classify the naturalness of the WSA into one category due to the distinct contrast between the canyon and the rim area.

Solitude

The opportunities for solitude in the Rio Chama WSA are outstanding. The topographic and vegetative screening of the Rio Chama Canyon offer a tremendous experience of solitude for visitors who are down by the river. A truly unique feeling of isolation is possible while either floating or hiking the inner canyons below the rims.

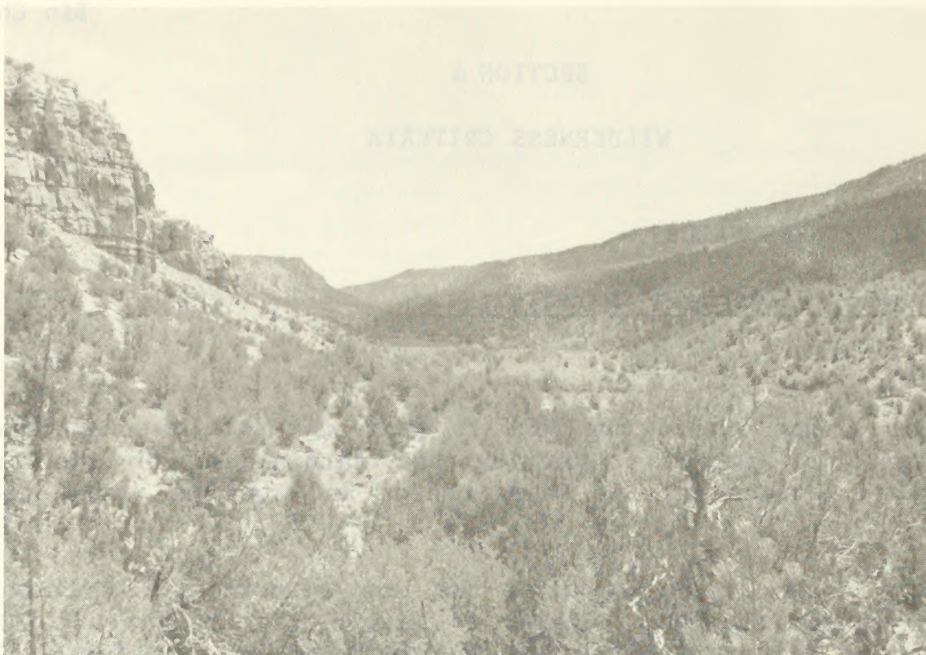


Figure 1 - View from Rio Chama below Navajo Peak looking north and east.

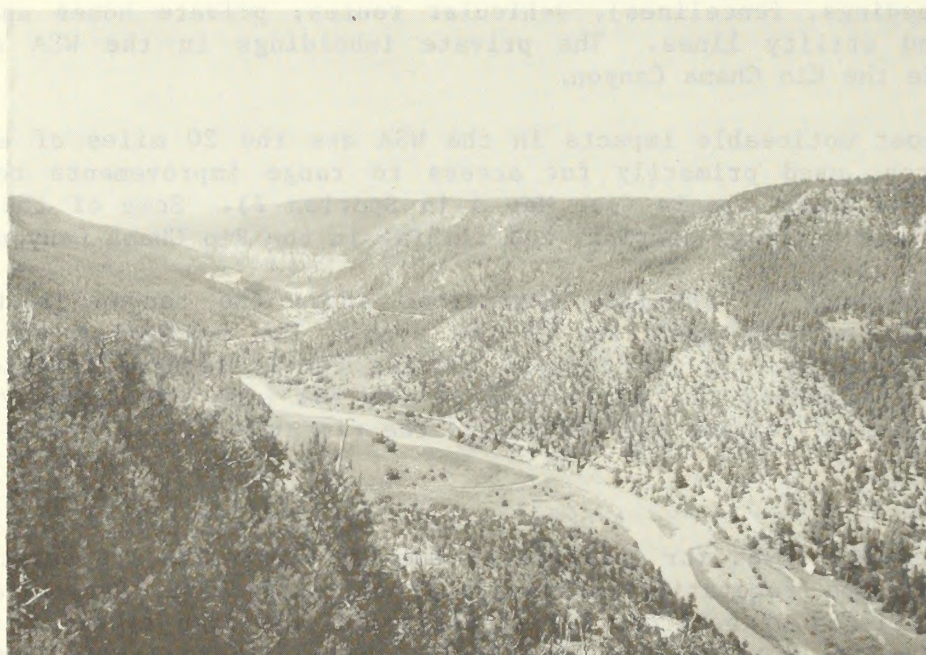


Figure 2 - View from Navajo Peak overlooking private inholdings (vacation homesites) and Santa Fe U.S. Forest Service Chama River Canyon Wilderness Area (south).

Figure 3 - Side canyon entering the
Rio Chama from the east.

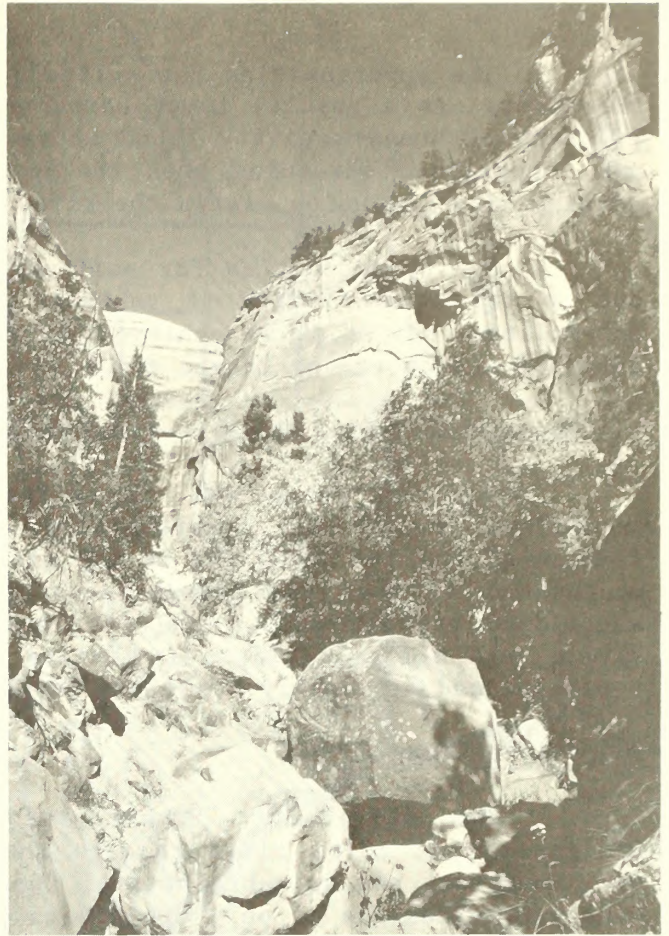
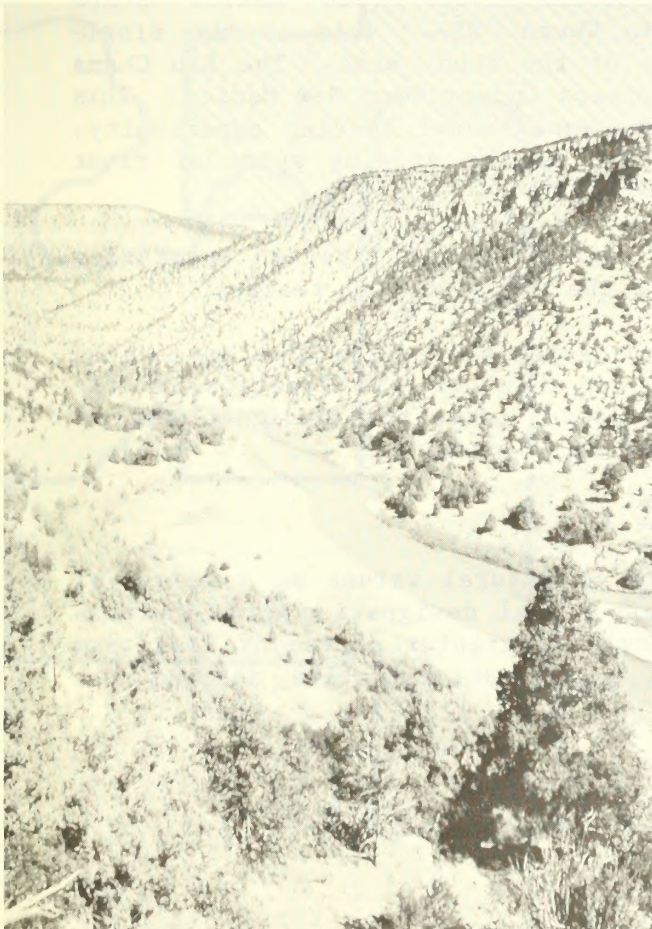


Figure 4 - View of the Rio Chama from
below the El Vado Reservoir.

The opportunities for solitude are primarily due to limited access to the river. As a result, fewer encounters with humans are anticipated. Also, evidence of human activity found above the canyon are mitigated by vegetative and topographic screening when the user is down by the river. A user can readily find seclusion within the river canyon boundaries.

The opportunities for solitude are somewhat diminished above the rim due to the accessibility of vehicles and the closeness of U.S. Highway 84. But solitude may still be achieved by the user in secluded locations which are easily found above the canyon rims.

Opportunities for Primitive and Unconfined Recreation

The Rio Chama WSA offers a variety of outstanding primitive and unconfined recreation opportunities. The most significant recreational feature of the Rio Chama WSA is the river itself, where boating occurs several months out of the year (April-July). Other opportunities for primitive and unconfined recreational activities include backpacking, hiking, cross-country skiing, and camping. These activities do not require facilities or motorized equipment and are easily available in the WSA.

Special Features

The Rio Chama "Scenic and Pastoral River" (New Mexico State Designation in 1978) flows through the Rio Chama WSA. This is the single most important and valuable natural feature of the study area. The Rio Chama Canyon provides one of only two floatable rivers in northern New Mexico. This makes the Rio Chama not only unique in its recreational boating opportunity, but increases its future potential demand due to the growing sport of river running throughout the West.

The viewing of geologic features, wildlife, and riparian vegetation from the river make the Rio Chama portion of the WSA a special feature.

The U.S. Forest Service Chama River Canyon Wilderness Area is located immediately south and west of the WSA. Map 5 shows the location of the wilderness area. These specific state and federal protective designations are indicative of the special nature of the Rio Chama Canyon.

Multiple Resource Benefits

The Rio Chama WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would administrative designations available to the Bureau.



A more detailed discussion of multiple resource benefits may be found in Section 6 under the discussion of the impacts of the All Wilderness Alternative.

Diversity in the National Wilderness Preservation System

Ecotypes Present

The Bailey-Kuchler system classifies the Rio Chama WSA as being within the Rocky Mountain Forest Province. The potential natural vegetation according to Bailey-Kuchler is approximately 1,285 acres Pine-Douglas Fir, 1,000 acres of Pinyon-Juniper woodlands and 9,700 acres of Great Basin Sagebrush.

Distance from Major Population Centers

The WSA is within three hours driving time of Albuquerque, New Mexico. The spectrum of recreational opportunities would not be significantly expanded through wilderness designation but boating use of the Rio Chama is expected to increase due to the close proximity of Albuquerque.

MANAGEABILITY

Although the area is manageable as wilderness, the ability to manage the Rio Chama WSA as a wilderness area is influenced by private lands within the study area, legal and physical access, range operations, and uses of adjacent U.S. Forest Service lands.

The WSA contains 320 acres of private inholdings in two parcels which must be provided reasonable access regardless of any protective designation. These areas are located outside of the canyon and no manageability problems are anticipated. However, if the entire WSA is designated wilderness, it would be desirable to acquire these inholdings.

Visitor access to the WSA, if designated wilderness, could be obtained through adjacent U.S. Forest Service lands. Users may approach the area from the Chama River Canyon Wilderness Area located at the southern end of the WSA and east of the Rio Chama. Visitors may also gain access through the Santa Fe National Forest on the west side of the Rio Chama.

Regardless of whether the Rio Chama WSA becomes a wilderness area or not, access to the river by boaters must be considered. The major put-in point for boaters on the Rio Chama is the El Vado Fishing Ranch, located below El Vado Reservoir and owned by Mr. Carl Cooper. Presently, the Bureau of Land Management and the Santa Fe National Forest have an informal cooperative agreement for continued use of Mr. Cooper's land as a public launching site for floating the Rio Chama. In the event Mr. Cooper declines to allow public access to the river, an access point would be requested on Bureau of Reclamation lands immediately below El Vado Reservoir on the Rio Chama.

The rolling, open terrain of the WSA above the Rio Chama Canyon rims allows for unlimited access for off-road vehicle use. The major demand for use by motor vehicles occurs when maintenance is necessary on range improvements and during the hunting season when hunters traverse the eastern rim area for mule deer and elk. ORV use would be restricted if the WSA was designated as a wilderness area. It would be difficult to effectively control vehicular use on the top rim areas without additional fencing and signing.

The WSA's southern boundary is contiguous with the U.S. Forest Service Chama River Canyon Wilderness Area. Management of the Rio Chama WSA as a wilderness would be enhanced by this situation since nonconforming uses that might otherwise diminish wilderness values along the WSA's southern boundary will not occur.

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

Public involvement for this WSA began with the Rio Grande Management Framework Plan (1979) and continued throughout the Taos Resource Area Roadless Study, the resulting WSA recommendation phase, and the Off-Road Vehicle Designation Plan which included the Rio Chama WSA. There were also two open houses held for public input regarding the Rio Chama WSA. One was held in Albuquerque, New Mexico, on April 28, 1983, and the other in Taos, New Mexico, on April 26, 1983.

Public involvement specifically concerning the Rio Chama WSA has primarily been in the form of written comments. The majority of written comments indicate that Rio Chama qualifies as a wilderness due to its scenic beauty and opportunities for solitude and primitive types of recreation: hiking, camping, and boating. Comments have also been made expressing the need to extend the wilderness boundaries from the upper reaches of the U.S. Forest Service Chama River Canyon Wilderness Area. Those who expressed support for wilderness designation also discussed the need to protect the Pediocactus paprycanthus, "grama cactus", which has been unofficially reported in the WSA and is a potential candidate for the New Mexico Threatened and Endangered Plant Species List.

During the public comment period on the Albuquerque District Wilderness Draft Environmental Assessment (March 1983), 23 inputs were received on the Rio Chama WSA. Of these inputs, 22 favored wilderness designation of the area. These inputs primarily noted the uniqueness of the Rio Chama Canyon and the fact that the proposed WSA is adjacent to the existing U.S. Forest Service Chama River Canyon Wilderness Area.

Five inputs which favored designation questioned the amended boundary recommendation and were concerned that the amended boundary recommendation did not provide enough acreage to properly protect the river canyon. Several different proposals were made to reduce the acreage from the original 11,985 acres yet still provide for a buffer area to the canyon.

One input was received by the Continental Divide Trail Society which indicated the Rio Chama Canyon is a potential corridor for the Continental Divide National Scenic Trail, and the wilderness designation for the Rio Chama could help to assure protection of its scenic and recreational values.

Comments regarding manageability included recommendations for coordinating access needs with the U.S. Forest Service, Bureau of Reclamation, and N.M. Department of Natural Resources.

The single input opposing the wilderness designation pointed out that the area is on the eastern flank of the San Juan Basin and oil production is present three miles west at the Puerto Chiquito Field.

The comments cited in these inputs reflect a concern held by most of the respondents that the area should be protected through wilderness designation. The other major concern was that the final amended boundary be sufficient to provide the protection and isolation afforded to the adjacent U.S. Forest Service Chama River Canyon Wilderness Area so that a consistent wilderness experience may be available throughout the Rio Chama corridor.

SUMMARY OF SCOPING

Table 5 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in Table 5, issues related to cultural resources, air quality, education and research, water resources, recreation, visual resources, realty actions, soils, vegetation and wildlife were also considered in the District's Final Environmental Assessment and because little or no environmental impacts were identified, issues relating to these resources are not analyzed in this WAR.

TABLE 5

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Area of Critical Environmental Concern	This alternative will be considered through a recommendation for study as a "Special Management Area" in the Resource Management Plan (RMP) in the Taos Resource Area.
Amended Boundary	A different amended boundary was considered in the Albuquerque District Office Draft EA, but this amended boundary was modified to include more land along the canyon rim to protect visual resources from within the canyon. This modification was a result of public comment and is now the proposed action.
Issues Raised and Set Aside	Reasons for Not Considering a Detailed Analysis
Timber Sales and Fuelwood cutting	No significant impact was identified since there are presently no plans for commercial timber or fuelwood sales in the WSA.
Livestock Grazing	No significant impact was identified to livestock grazing; however, this issue will be discussed because of Statewide interest.
Mineral Exploration and Development	No significant impact was identified for minerals because of low potential.
Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy (No Action).
Amended Boundary	This is the Proposed Action.
Issues Selected For Detailed Analysis	
The quality of the area's wilderness values is a major issue of concern, particularly within the Rio Chama Canyon.	

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses the proposed action and two alternatives for the Rio Chama WSA: the All Wilderness Alternative, the Amended Boundary Alternative, and the No Wilderness Alternative (No Action).

ALL WILDERNESS ALTERNATIVE

Under this alternative the entire 11,985 acres of public land within the Rio Chama WSA would be recommended suitable for wilderness designation (refer to Map 1 for location of the WSA boundary).

Impacts to Wilderness Values

If designated wilderness, the existing uses and activities in the area and potential uses as identified in Section 3 of this document would be managed under the constraints of the Wilderness Management Policy (BLM, 1981).

Under the All Wilderness Alternative, the wilderness values present in the WSA would benefit significantly from the added long-term protection of Congressional designation.

Impact to Livestock Grazing

There would be no significant impact on the range program if the entire WSA were designated wilderness. Existing livestock operations would be allowed to continue at existing levels in the designated wilderness.

AMENDED BOUNDARY ALTERNATIVE (Proposed Action)

The Amended Boundary Alternative would recommend for wilderness designation the entire river corridor and one-quarter mile beyond the canyon rims (refer to Map 1). The area recommended for wilderness encompasses approximately 5,232 acres and is 5 miles in length.

This amended boundary alternative may prove more feasible for manageability than the All Wilderness Alternative and at the same time preserve the Rio Chama Canyon which requires more protective measures than the areas above the rims. The area proposed is adjacent to the existing U.S. Forest Service Chama River Canyon Wilderness Area (Map 5 in Section 4 of this appendix) and joint management procedures would be appropriate for the proposed Amended Boundary Wilderness Alternative.

Impacts on Livestock Grazing

There would be no significant impact on the range program if the Amended Boundary Alternative was implemented. No new range improvements are planned for the Rio Chama Canyon area.

NO WILDERNESS ALTERNATIVE

Under this alternative, the entire WSA would be managed under the existing Rio Grande MFP.

Impacts on Wilderness Values

The highest quality wilderness values of this WSA are located along the Rio Chama Canyon. Wilderness values would probably be maintained because of lack of vehicular access to this area. In the area outside of the canyon, naturalness would be degraded from continued vehicle use over the long term.

Impacts on Livestock Grazing

There would be no significant impact on the range program with this alternative.

APPENDIX 2

SABINOSO WSA (NM-010-055)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The Sabinoso WSA is located in San Miguel County, New Mexico, approximately 8 air miles northeast of Trujillo, New Mexico, 20 air miles northwest of Conchas Reservoir, and 1 mile due west of Sabinoso, New Mexico (Map 1). The WSA is included on four USGS topographical maps: the Maes Quadrangle, the Sabinoso Quadrangle, the Canon Olguin Quadrangle, and the San Ramon Quadrangle.

CLIMATE AND TOPOGRAPHY

The WSA is composed of a series of high, narrow shelves surrounded by steep, rock-walled canyons. Elevation in the WSA ranges from 4,500 feet (1,500 meters) to 6,000 feet (2,000 meters). The WSA's western boundary runs along the bottom of Canyon Largo, which enters the Canadian River at the Town of Sabinoso. The Canyon Largo is an ephemeral stream.

The mean annual temperature for the Sabinoso WSA is 55° F (13° C). The average annual temperature ranges from 90° F (32° C) during the summer months to 20° F (-6° C) in the winter. July is usually the warmest month and January the coldest.

Annual precipitation ranges from 14 to 18 inches (35.6 to 45.7 centimeters). Precipitation is mainly the result of spring and summer rainfall.

Prevailing winds are primarily from the south and southwest.

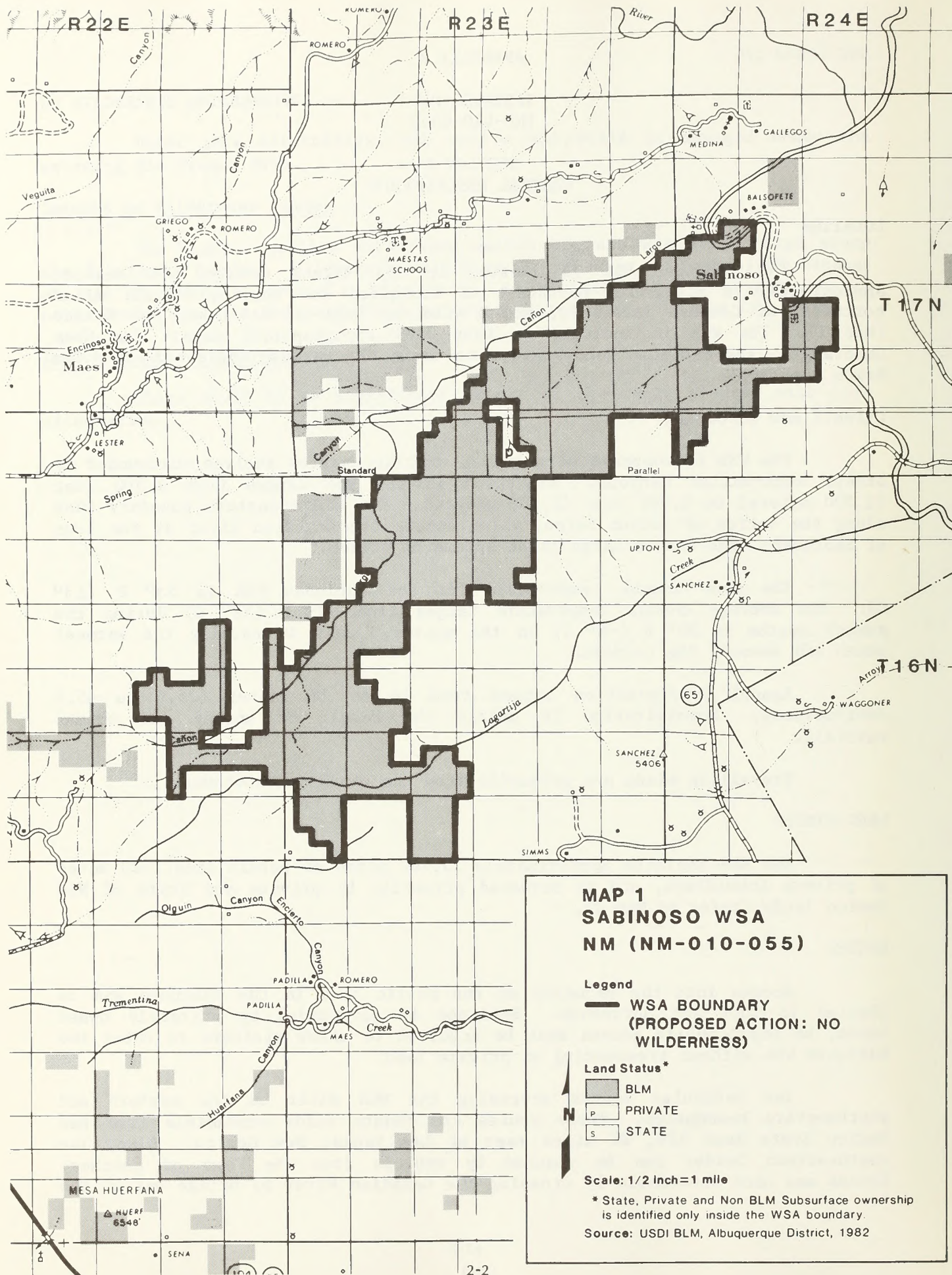
LAND STATUS

The WSA contains approximately 15,760 acres of public land, 320 acres of private inholdings, and is bordered primarily by private and State of New Mexico lands (refer to Map 1).

ACCESS

Access into the majority of the public land in the Sabinoso WSA is limited to foot and horseback. Sabinoso is surrounded by privately owned lands, so legal public access must be acquired to allow visitors to enter the Sabinoso WSA without trespassing on private land.

Two vehicular routes accessing the WSA enter on the western and southwestern boundaries. These routes are county roads accessible from New Mexico State Road 104, 20 miles east of Las Vegas, New Mexico. Also, the southeastern border can be reached by vehicle from the Town of Sanchez. Access was once attainable by crossing the Canadian River by bridge out of the



Town of Sabinoso; this bridge would have to be rebuilt to make this route passable for motor vehicles or horseback riders. All routes are on private land and have locked gates. (Refer to Map 2 for the location of these routes.)

PROPOSED ACTION, ALTERNATIVES, AND ISSUES

A detailed description of those actions associated with the proposed action and the alternatives is provided in Table 1.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Wilderness (Proposed Action)
°Manage 15,760 acres as Wilderness.	°Manage 15,760 acres without Wilderness protection.
-Close seven miles of vehicle ways.	-Vehicle use will be allowed to continue.
-Permits will be required for vehicle access to 16 stock tanks.	-Current levels of authorized grazing use would be maintained.
-Current levels of authorized grazing use would be maintained.	-No attempt would be made to acquire any State or private lands within or adjacent to the WSA.
-Attempts would be made to acquire 320 acres of private lands and 3,120 acres of NM State lands within or adjacent to the WSA.	-Attempts would be made to acquire legal access to the WSA.
-Attempts would be made to acquire legal access to the WSA.	

A summary of the significant environmental impacts by alternative for each of the identified major environmental issues is provided in Table 2.

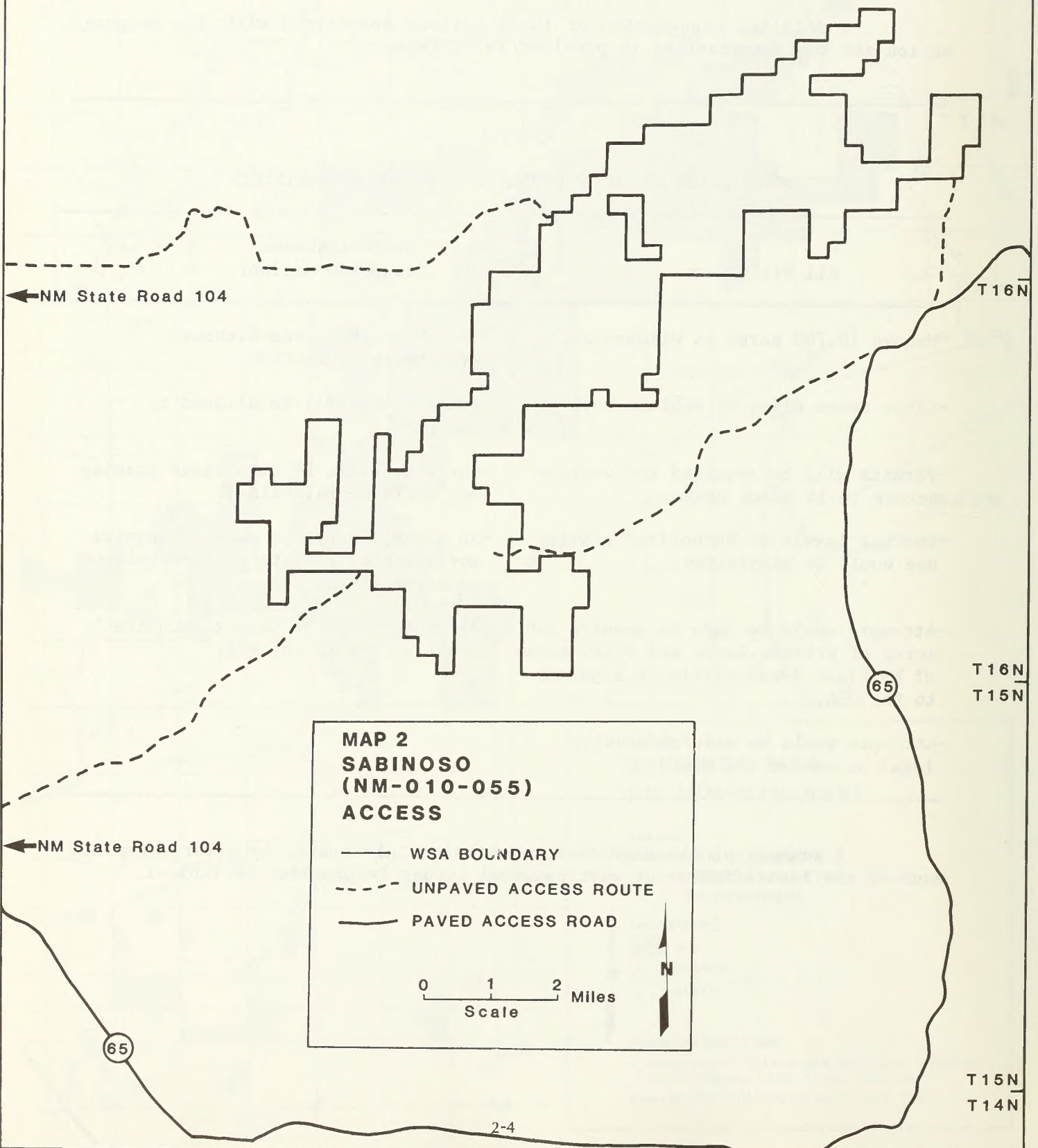


TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives By WSA/Acreage	<u>Major Environmental Impacts</u> <u>Wilderness Values</u>
All Wilderness (15,760 acres)	Wilderness protection would maintain the area's wilderness values.
No Wilderness (15,760 acres) (Proposed Action)	Vehicular access would be limited due to private lands so potential degradation to wilderness values would be low.

SECTION 2

EXISTING RESOURCES

GEOLOGY

The geology of the Sabinoso WSA consists of a mantle of flat-lying Mesozoic sediments up to 2,000 feet thick, underlain by approximately 500 feet of Upper Paleozoic (Permian and Pennsylvanian) sediments. The dominant surface feature is the Canadian Escarpment, a large east-northeast trending upland that forms a prominent rim capped by Cretaceous sandstones (Dakota and Mesa Rica Formations). This escarpment is situated approximately 1,100 feet above the surrounding plain.

WATER

The WSA lies between the Canyon Largo and Lagartija Creek drainages, which flow into the Canadian River. The Canadian River is a year-round source of water along the northeastern boundary of the WSA. Flows of the Canadian River can vary widely. The yearly average flow is relatively low (100 cubic feet per second--cfs), and it can drop to virtually a trickle with only a few pools of warm water. After heavy periods of precipitation, the Canadian River can flow at a high level of 10,000 to 20,000 cfs.

Subsurface flows through sand and gravel appear to be present in Canyon Largo most of the year. A few surface flows may exist during heavy periods of precipitation.

When surface water is present in the WSA, it must be purified for domestic consumption.

SOILS

Two soil associations are present in the Sabinoso WSA. On the flatter tops of mesas and ridges is the Crews-Bernal-Travessilla Association. The soils on the gently sloping to moderately steep, rolling uplands that make up this association are predominantly shallow. They are underlain for the most part by sandstone bedrock and hardened caliche. Although the majority of the soils in this association are developing residually in materials weathered from the underlying rocks, some additions of eolian and alluvial sediments occur. This is particularly true in those cases where the soils are of moderate depth or deeper.

Along the canyon walls and in the bottoms is the Rock Land-Rough Broken Land Association. Characteristic features of this association are the rough and broken topography, very steep slopes, and rock outcrops. Included are escarpments, steep canyons walls, rocky ridgetops, rock ledges, and steep breaks. All of these are dominated by rock outcrops and patches or small areas of highly variable soils. The exposed bedrock is predominantly sandstone and shale, but it also includes other sedimentary materials.

Moderately extensive areas of shallow soils may occur on the ridge crests and mesa tops. The deep soils are confined generally to small areas in narrow valley bottoms and on slopes at the base of escarpments.

VEGETATION

The topography of the Sabinoso WSA dictates its vegetation. The rugged country primarily supports pinyon and juniper shrubs, with a perennial warm season grass savanna along the smoother mesa tops.

The pinyon/juniper woodlands include pinyon, juniper, and ponderosa pine. Understory shrubs associated with these trees are wavyleaf oak, shinners oak, mesquite, mountain mahogany, berberis and a variety of cacti. Along the canyon bottoms where the water table is high and streams sometimes flow, riparian species are found including cottonwood and willow.

The grasslands along the mesa tops are made up predominantly of blue grama, hairy grama, sideoats grama, little bluestem, sand dropseed, and alkali sacaton. An abundance of rubber rabbitbrush and cholla cactus are indicative of overgrazed range, which has developed primarily at the mouth of Canyon Largo.

The vegetation density varies throughout the WSA depending on moisture availability and slope steepness. The denser stands of ponderosa pine and pinyon/juniper woodlands are found in the bottomlands and along the lower slopes of the canyon. Some thick stands of ponderosa occur on the mesa tops in the southwest portion of the WSA. Where there are extremely steep slopes along Canyon Largo, Lagartija Creek, and feeder canyons, the land is barren or sparse of vegetation. The mesa tops support the more drought-resistant juniper, which can be found in relatively dense stands. The grasslands are interspersed among the juniper.

Although no record exists of past timber sales, residual ponderosa pine stumps on the southwestern mesa tops of the WSA indicates previous selective harvesting.

A vegetation type summary of the Sabinoso WSA is on file in the BLM Taos Resource Area Office and is available for inspection.

Threatened and Endangered Plants

No threatened or endangered vegetation species have been identified in the WSA.

WILDLIFE

Habitat in the Sabinoso WSA can be classified as a single type, the pinyon/juniper shrub. The northern area (extending from the Canadian River up Canyon Largo for 2 to 3 miles) has been extremely disrupted by overgrazing.

Most of the habitat within the WSA is generally in fair condition. Utilization approximations for several species include 50 percent or greater on cholla cactus, and 90 to 100 percent on mesquite; rubber rabbitbrush has been so denuded that photosynthesis is inhibited. The majority of this area is under private ownership, but WSA land adjacent to portions of unfenced private land suffers the same conditions of overgrazing as the private sections.

Habitat condition for foraging mammals is excellent in the southern portion of the WSA. Much greater forage availability and species diversity exist in the southern reaches of Canyon Olguin and Lagartija Creek than in the northern portion of the WSA.

Major game species include: mule deer, coyote, bobcat, grey fox, turkey, and mourning dove. The WSA has potential for providing good mule deer habitat, but BLM wildlife biologists have located surprisingly few mule deer.

The WSA also has the potential to support two introduced species, the ibex and the Barbary sheep.

The WSA would appear to have potential for a high degree of use by birds of prey, especially cliffdwelling and nesting species. However, the only species observed during the nesting season have been the redtailed hawk and the American kestrel. No nests have been observed and very few whitewash areas exist along the cliff rocks.

A wide variety of passerine birds can be found in the WSA. The regions with the greatest density and diversity are the canyon bottoms and the rimrock areas, because these two locations usually provide the greatest structural diversity. Higher densities of these birds may also be found nearby springs and other water locations adjacent to the WSA.

A taxonomic list of probable and potential species occurrence in the Sabinoso WSA is on file in the BLM Taos Resource Area Office.

Threatened and Endangered Animals

The only threatened or endangered species that potentially exists within the Sabinoso WSA is the black-footed ferret (Mustela nigripes). However, this species' presence is highly unlikely as the habitat conditions to support adequate prairie dog populations are not present.

VISUAL RESOURCES

The canyon lands of the Sabinoso WSA provide a striking contrast to the surrounding rolling prairie. This contrast is amplified by the varying vegetation in the two different areas. Landscape colors are predominantly green, gray, and brown with some variations in the distant background. The overall feeling varies from one of isolation within the steep narrow canyons to vast openness above the canyon rims and on top of the mesas.

In accordance with wilderness interim management objectives, a Visual Resource Management (VRM) Class II has been assigned to the WSA. The Class II VRM rating denotes that any change in the basic elements of the landscape (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape. This classification is an interim classification while these lands are under study. The WSA had no previous VRM classification.

CULTURAL RESOURCES

The Sabinoso WSA has not been systematically surveyed. However, finds of artifacts in and near the WSA and the known archaeological record of northeastern New Mexico suggest that the WSA contains a high density of archaeological sites dating from the prehistoric PaleoIndian period through the historical period of homesteading and ranching.

AIR QUALITY

Air quality in the WSA is excellent. No significant sources of particulate or gaseous emissions exist within 30 miles of the WSA.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

Energy Minerals

Leasable

The Sabinoso WSA is located within the Cuervo Basin, which has been classified by the U.S. Geological Survey as prospectively valuable for oil and gas. The WSA contains 6 leases for oil and gas as shown on Map 3, but no drilling has been reported within the WSA. The BLM Taos Resource Area's 1981 Mineral Resource Inventory (MRI) reported that only 6 wells were drilled within a radius of 25 miles from the WSA. None of the wells encountered hydrocarbons, including the three wells that were drilled deep enough to reach Precambrian strata. While it appears that there is a sufficiently thick sequence of sedimentary rocks (2,000 to 2,500 feet), and many of the WSA's formations are known to produce petroleum products elsewhere, the WSA does not seem to contain either favorable source or reserve strata. Consequently, the potential for petroleum products in the WSA is concluded to be low (refer to Table 3).

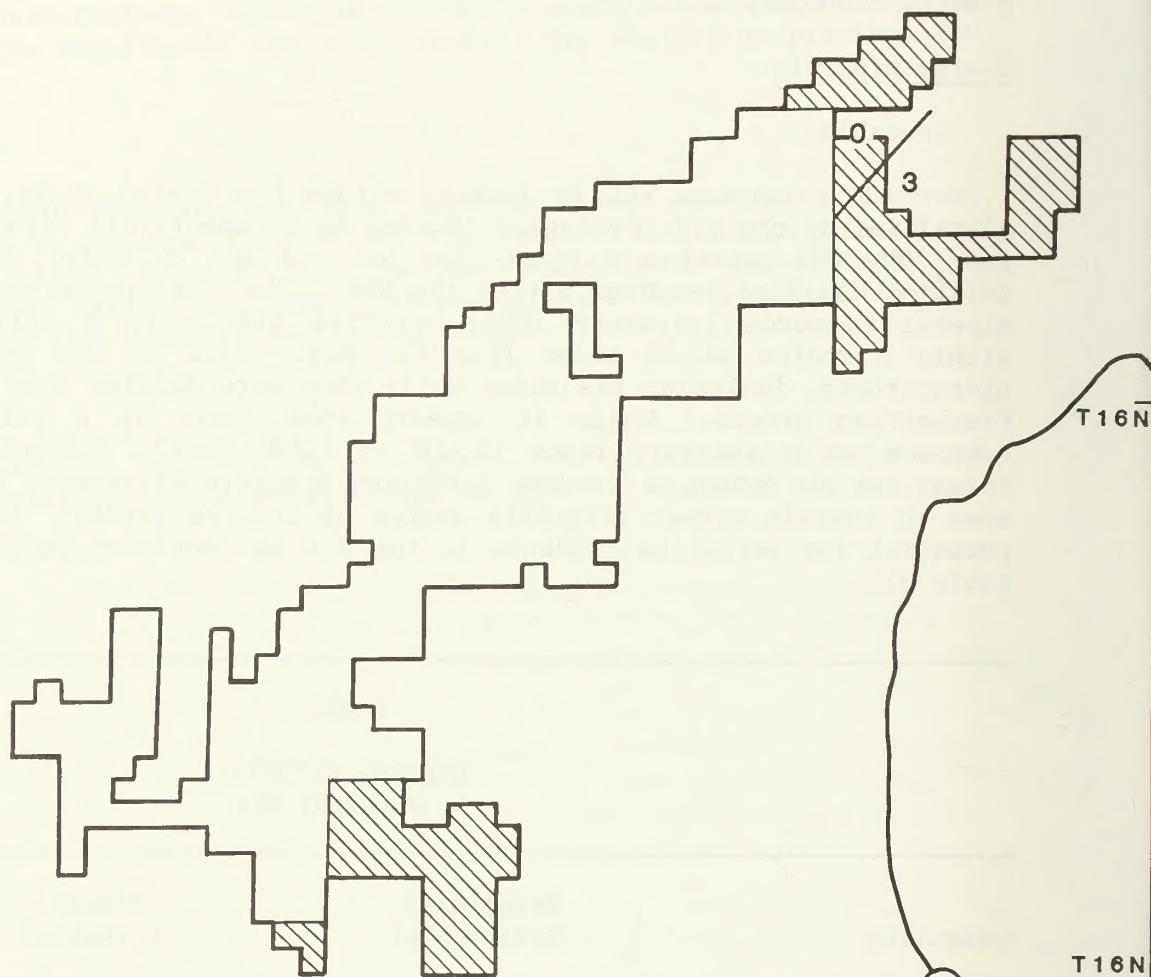
TABLE 3

MINERAL POTENTIAL
SABINOSO WSA

Commodity	Associated Environment	Mineral Potential	Acreage ^{a/}
Uranium	Mudstones in Chinle Formation	Low	NC
Sand & Gravel	Quaternary alluvium	Low	NC
Sandstone	Dakota & Mesa Rica Sandstones	Low	NC
Oil & Gas	Mesozoic, Paleozoic Marine and Continental Sedimentary Rocks	Low	NC


Source: Tecolote Corporation. 1981. Taos Mineral Resource Inventory.

Note: ^{a/} Acreage on areas of low potential were not calculated (NC).



**MAP 3
SABINOSO
(NM-010-055)
MINING CLAIMS &
MINERAL LEASES**

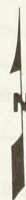
— WSA BOUNDARY

 POST FLPMA OIL/GAS
LEASES

0 / PRE-FLPMA MINING CLAIMS

3 / POST-FLPMA MINING CLAIMS

0 1 2 Miles
Scale



← NM State Road 104

65

65

Because none of the strata found in the WSA are known to be significant sources of coal, and no occurrences or evidence of coal have been reported, the potential for the discovery of coal within the WSA is rated as very low (refer to Table 3).

Locatable

In past years some uranium exploration occurred in and around the Sabinoso WSA, but no significant deposits were discovered. Activity is presently limited to three mining claims located on October 1, 1981, in the eastern portion of the WSA (T. 17 N., R. 24 E., Section 19) as shown on Map 3.

A difference of opinion exists concerning the uranium potential in the Sabinoso WSA. The BLM Taos MRI reported that several abnormally high concentrations of uranium (anomalies) were discovered in the Chinle Formation as a result of airborne and ground radiometric surveys. However, subsequent re-examination of several of the anomalies during a national evaluation revealed that the uranium occurrences were minor. The conclusion of this evaluation has been that the potential for the discovery of a valuable uranium deposit in the Sabinoso WSA (as well as the rest of northeast New Mexico) in the Chinle and Morrison Formations is very low.

Uranium assessments from the Energy Reserves Group (Albuquerque, New Mexico) have given the Chinle Formation a very high rating for uranium potential. Its conclusions seem to be based on exploration efforts and the fact that the Chinle Formation within the WSA is known to contain uranium.

The New Mexico Bureau of Mines recently (1982) conducted geologic and geochemical studies of the Sabinoso WSA that included the collecting of samples for analysis. While the final results of the field study are not available at this time, preliminary contact with Bureau of Mines personnel indicates that, while uranium was found, its concentrations are not sufficiently great to be considered economic under present market conditions.

Non-Energy Minerals

Leasable

No activity is occurring in the Sabinoso WSA for non-energy leasable minerals (phosphates, sodium, or potassium), and none is expected. While some 2,000 to 2,500 feet of sediments underlie the WSA, none of them are known to contain appreciable amounts of sodium, potassium or phosphate. In addition, the geologic environment is such that deposits of these minerals are not expected to be found. Consequently, the potential for the discovery of valuable deposits of non-energy leasable minerals is considered to be very low.

Locatable

While no appreciable exploration or development efforts are known to have occurred for non-energy locatable minerals in the WSA, several base metals (copper, lead, zinc, and manganese) are known to occur in the Chinle Formation, associated with uranium. The Atlantic Richfield Company has classified the Sabinoso WSA as having moderately high potential for the

discovery of valuable locatable minerals, based on exploration activity and geologic familiarity with the area.

Because so little exploration for locatable minerals has taken place in the Sabinoso WSA, the New Mexico Bureau of Mines conducted a field study during 1982 to assess the potential for base metals. Samples were taken which indicated the presence of "red-bed" copper. However, this material is in insufficient concentration to warrant further exploration under present market conditions.

Salable

While the sedimentary sequence in the Sabinoso WSA is relatively thick (2,000 to 2,500 feet), it is too easily broken and too erosive to be considered a good source of aggregate. In addition, the general region contains a considerable source of aggregate (Tertiary gravels) in more convenient locations to satisfy any future needs. Consequently, the potential for salable minerals in the WSA is considered to be very low.

WATERSHED

No watershed developments exist in the Sabinoso WSA, and no plans have been made for watershed treatment in the future within the WSA boundaries.

LIVESTOCK GRAZING

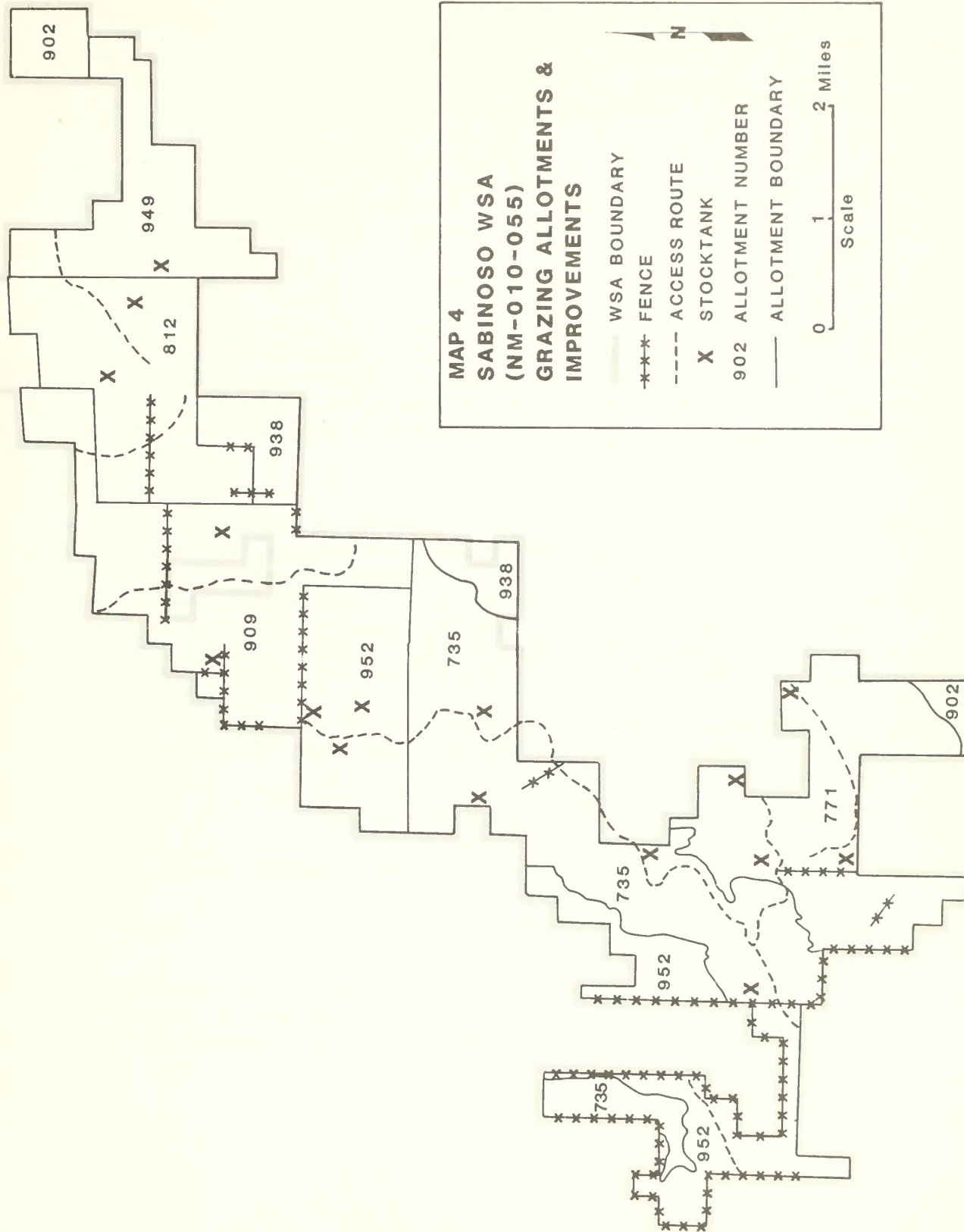
Nine grazing allotments overlap the Sabinoso WSA; these are shown on Map 4. The majority of allotments are fully stocked and have cow-calf operations. Table 4 is a summary of the existing livestock use within the WSA.

TABLE 4

ALLOTMENT SUMMARY

Allotment Name	Allotment Number	AUMs	Acres	Number of Cattle	Season of Use
Arroyo Del Mesteno	902	112	615	9	03/01-02/28 Yearlong
Sabinoso Squeeze	812	168	1,840	20	06/15-10/15 Summer
Upton	938	149	851	12	03/01-02/28 Yearlong
Canyon Vivian	909	189	2,782	16	03/01-02/28 Yearlong
Canyon Olguin	952	165	1,479	14	03/01-02/28 Yearlong
Rimrock	735	870	4,781	73	03/01-02/28 Yearlong
Lagartija Creek	771	380	1,710	69	10/01-02/28 Winter
Canyon Sabinoso	949	256	1,405	21	03/01-02-28 Yearlong
Canyon	736	165	1,479	14	03/01-02/28 Yearlong
TOTALS		2,454	16,942	248	

Source: Allotment files, BLM Taos Resource Area Office.



Several range improvements exist in the WSA (refer to Map 4). The majority of improvements are allotment boundary fences, stock tanks, and trails that require maintenance on a periodic basis. Access to these improvements is primarily cross-country, utilizing unmaintained trails. Most improvement maintenance must be performed on horseback except in the southern region, which is accessible by vehicle.

Potential range improvements within the WSA include thinning of pinyon/juniper woodlands and reseeding with palatable forbs and grasses. More fencelines and stock tanks may also be considered as potential improvements. No range projects are presently proposed.

FOREST PRODUCTS

Within the Sabinoso WSA, approximately 130 acres of ponderosa pine exist (with 20,000 board feet of potential commercial timber), and 1,000 acres of pinyon/juniper (with the potential of 3,000 cords of wood for fuelwood use). No forest products in the WSA are under contract or permit use. The cutting of trees for home fuelwood takes place without authorization.

RECREATION

Very little known recreation activity occurs within this remote WSA. Local ranchers frequent the Largo Canyon on horseback, and some ORV use occurs where vehicle access is available. No fishing use occurs because no fisheries habitat is available; hunting is also limited by the rugged terrain. Additional information on the hunting pressure and success rates for New Mexico Game and Fish Department's Game Management Unit Number 42, which includes the Sabinoso WSA, is on file at the BLM Taos Resource Area Office.

Recreation use may be increased if legal access to the WSA is obtained, because visitors could enter the Sabinoso WSA without trespassing on private land.

NATIVE AMERICAN USES

No areas of religious significance to Native Americans are known to be located within the WSA.

REALTY ACTIONS

No rights-of-way, withdrawals, easements, or permits are associated with the Sabinoso WSA. However, a 320-acre parcel of private land exists within the boundaries of the WSA (refer to Map 1). Reasonable access to this parcel must be provided.

WILDLIFE

Increase in potential use of the Sabinoso WSA by large mammals could be obtained through improvement of wildlife habitat, including vegetation manipulation and additional water sources. Vegetation manipulation would take place at the northern end of the WSA to improve forage. Catchments could provide added water sources. No wildlife habitat management plan has been prepared to date.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

The Sabinoso WSA consists of vast open expanses and rugged canyons that create a feeling of overall naturalness in the area (refer to Figures 1 through 4). Broad vistas are common as the visitor looks out from mesa tops over the rolling prairie. The lack of many human impacts within the WSA accentuates its natural appearance. However, the poor condition of the vegetation in the northern part of the WSA (the result of overgrazing on the intermingled public and private lands) affects the feeling of naturalness in that area.

The WSA is mostly inaccessible to motor vehicles, which has resulted in fewer human impacts (powerlines, residential or commercial development) than would normally occur within such a large expanse of land. The man-made structures and human activities that appear within and surrounding the WSA are screened by vegetation and topography. Man's evidence of intrusion, mainly trails and range improvements, are limited by the rugged country.

Solitude

Outstanding opportunities for solitude exist in this vast, open canyon area. The isolation of the WSA from any large population areas and the few vehicular access points into the WSA have naturally restricted the number of people who visit it. The rugged canyons and areas of dense vegetation also enhance the feeling of being alone for any hiker or horseback rider.

If legal access to the WSA were obtained across private land the WSA would be accessible to more visitors, reducing the experience of solitude. Wilderness designation itself through public attraction may produce similar reductions to this particular wilderness value.

Opportunities for Primitive and Unconfined Recreation

Recreational opportunities in the Sabinoso WSA include hiking, camping, horseback riding, and hunting. These opportunities are somewhat limited due to access and water problems. An increase in opportunities for this type of recreation would most likely occur if the BLM acquired legal public access to the Sabinoso WSA as part of wilderness management policies. When travelling along topographic features, it is nearly impossible for the visitor not to cross private lands. This adversely affects the quality of the recreational experience for visitors attempting to stay within the WSA boundary.



Figure 1 - View of Canyon Olguin from the southwestern end of the Sabinoso WSA. Note the ephemeral drainage on the canyon bottom.



Figure 2 - Lagartija Creek, located on the southeast end of the Sabinoso WSA, is also an ephemeral water source.

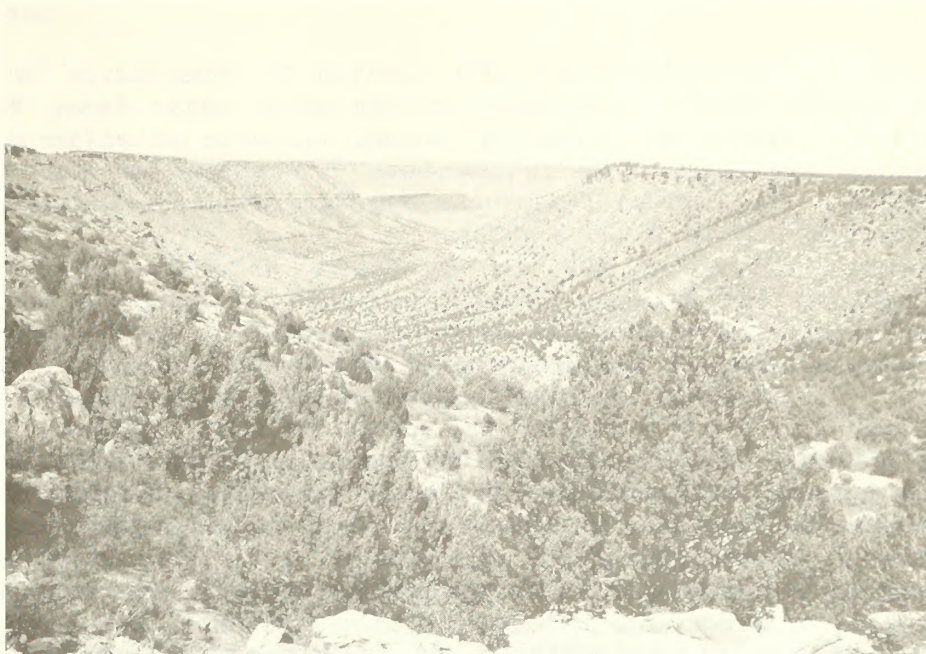


Figure 3 - View of Canyon Largo from atop a mesa at the northern end of the Sabinoso WSA.



Figure 4 - View from atop a mesa on the southeastern boundary of the WSA overlooking the eastern plains of New Mexico.

Recreation opportunities are also limited to some degree by the lack of water sources. Some stock catchments retain water after heavy rains, and ephemeral drainages also flow following rains, but more often no dependable water sources are available. All water must be carried in for human and animal consumption. The extreme ruggedness and remoteness of the WSA makes it a very dangerous place to be without water.

Special Features

The most obvious special features of the Sabinoso WSA are its geology and topography. The location of a large, deep canyon area surrounded by the wide-open eastern New Mexico plains is unique to this region. The deep incisions cut into the flat topography by Canyon Olguin, Canyon Largo, and Lagartija Creek create a significant topographical and geological impact in this open expanse of hundreds of square miles of rolling prairies and mesa tops. The canyons expose geological displays of stratified rock, and could serve as a teaching aid for earth history students if they can reach the area.

Another feature of the Sabinoso WSA is its scenic vistas. From atop the mesas in the WSA are excellent viewing opportunities for hikers and sightseers.

Multiple Resource Benefits

The Sabinoso WSA contains many natural values that are part of its undisturbed character. However, no unusual or special resources exist that would benefit more by wilderness designation than by non-wilderness management.

Diversity in the National Wilderness Preservation System

Ecotypes Present

The Bailey-Kuchler system classifies the Sabinoso WSA as being in the Colorado Plateau Province with a potential natural vegetation of approximately 6,700 acres of Juniper-Pinyon woodlands and 9060 acres of Grama-Gelleta Steppe.

Distance from Major Population Centers

The WSA is within 3 hours' driving time of Albuquerque, New Mexico.

MANAGEABILITY

After public comments were received on the Draft EA, a reassessment was made of the manageability of the Sabinoso WSA as wilderness. Serious manageability problems are anticipated under wilderness designation.

The primary considerations for effective wilderness management of this WSA are: the configuration of the WSA boundary, the boundary's relationship to topographic features and land status, and legal access. The land status in the Sabinoso WSA is a mosaic of private and state lands

interspersed with public land. The WSA boundary is very irregular; several "necks" of public land surrounded by state and private land exist. It is nearly impossible to travel along topographic features, such as canyons or ridges, without crossing private lands, because the land pattern does not conform with the topographic features.

Primary vehicular access to the WSA is available through private land, Canyon Olguin, and Lagartija Creek, but all the private routes have locked gates. Private landowners surrounding the WSA oppose providing any legal access across their lands. To guarantee visitor access to the area easements or rights-of-way would have to be obtained.

The BLM cannot reasonably manage the Sabinoso WSA to preserve its wilderness characteristics over the long-term unless all of the following actions are implemented:

1. Acquire certain State of New Mexico and private land sections adjacent to the WSA, that would help create a WSA boundary conforming to the topographic features.
2. Mark the WSA boundary with signs.

The BLM has analyzed other potential boundary configurations, but none were found to alleviate all the management problems.

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

Public involvement regarding the Sabinoso WSA has continued throughout the Taos Resource Area Roadless Study and resulting WSA recommendation. Two open houses were held to gather public input; the first was in Taos, New Mexico on April 26, 1983, and the second in Albuquerque, New Mexico on April 28, 1983.

During the public comment period on the Albuquerque District Wilderness Draft Environmental Assessment (USDI, BLM 1983), 26 inputs were received regarding the Sabinoso WSA. Of these, 19 inputs favored wilderness designation for the WSA. The comments noted the need for protection of this unique natural area, the significance of the area as a representative of the high plains upland ecotype, the excellent opportunities for solitude and recreation, and the spectacular scenery. They also discussed the possibility of the BLM acquiring inholdings and access. The State Land Office mentioned that wilderness status would not conflict with any land uses in the state sections.

Seven inputs opposing wilderness designation included several petitions containing a total of 91 signatures. Almost all the people signing the petitions were residents located near the Sabinoso WSA. Some comments identified the irregular shape of the WSA (which could lead to trespass of private property by recreationists), the requirement to provide reasonable access to inholdings, and the reluctance of private landowners to provide access to federal lands. These comments expressed concern that the lack of water and the rugged nature of the topography make the WSA a dangerous place for visitors. The fear that wilderness designation would place restrictions on livestock operators was also mentioned. Another fear expressed was that wilderness designation would attract more visitors, thus reducing the WSA's privacy while increasing litter, trespass, and vandalism.

Some comments complained that the wilderness process was not well publicized, nor was enough information on the process available to the public.

Several comments were also received that opposed designation due to the potential value of the WSA for mineral development. The lack of mineral exploration was cited as a reason to recommend multiple use of the WSA rather than wilderness designation. Another resource conflict was perceived to exist between wilderness management and habitat management for exotic wildlife species (ibex and Barbary sheep).

Some specific comments pointed out that the county roads mentioned on page F-1 of the Draft EA are actually private roads. These comments also stated that the road shown on Map F-2 of the Draft EA as SMC Road C51A is also a private road. The true location of SMC Road C51A is in the area of Trujillo, New Mexico; Map F-2 was in error.

The commentors mentioned that the cadastral survey completed in 1970 was inaccurate. The original corner-sections from the 1880s were located; they do not agree with the 1970 survey corner-sections. The area is recommended to be resurveyed to determine correct property boundaries.

The picture of the old homesteads shown in the draft WAR was identified by a commentor as being outside the WSA. The roads shown in Map F-3 were reported to be in extremely poor condition; they should be considered trails. These comments have been analyzed by the BLM, and corrections made to the text and maps.

Other comment letters were received that made general comments on the Sabinoso WSA. These comments indicated little interest in the proposal or expressed no objection for or against designation. These comments were primarily from state and federal agencies.

SUMMARY OF SCOPING

Table 5 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in Table 5, issues related to cultural resources, air quality, education and research, water resources, recreation, visual resources, realty actions, soils, vegetation, and wildlife were considered in the District Final EA's and because little or no environmental impacts were identified, issues relating to these resources are not analyzed in this WAR.

TABLE 5

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons For Not Including This Alternative
Amended Boundary	Due to the configuration of the WSA, several amended boundaries were considered to reduce manageability problems. However, a more manageable boundary based on topographic features could not be identified without acquisition of a significant amount of State lands.
Issues Raised and Set Aside	Reasons For Not Considering a Detailed Analysis
Timber Sales and Fuelwood Cutting	No significant impact was identified since there are presently no plans for commercial timber or fuelwood sales in the WSA.
Livestock Grazing	No significant impact was identified to livestock grazing; however, this issue will be discussed because of Statewide interest.
Minerals	No significant impact was identified for minerals because of low potential.
Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Policy
No Wilderness	Required by BLM Wilderness Policy (No Action)
Issues Selected for Detailed Analysis	
The major issue of concern to be analyzed for the Sabinoso WSA is the quality of the WSA's wilderness values.	

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses two alternatives for the Sabinoso WSA: the All Wilderness Alternative, and the Proposed Action or No Wilderness Alternative (manage under the existing land use plan).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 15,760 acres of public land within the Sabinoso WSA would be recommended as suitable for wilderness designation. If designated as wilderness, existing and potential uses would be regulated by the BLM's Wilderness Management Policy (1981).

Impacts to Wilderness Values

Under the All Wilderness Alternative, the wilderness values existing in the Sabinoso WSA would benefit significantly from the added long-term protection of congressional designation.

Impacts to Livestock Grazing

The livestock grazing operations within the Sabinoso WSA may be impacted if the entire WSA is designated as wilderness. These effects would result from the inconvenience associated with a prohibition on vehicle access to 7 miles of ways in the WSA. Limitations on vehicular use, and maintenance and construction of new range improvements would decrease the flexibility of the livestock operators. Reasonable vehicle access would be maintained to the private inholding in the WSA. No plans are proposed for vegetation manipulation within the WSA, so the impacts on this aspect of livestock grazing are expected to be low.

NO WILDERNESS ALTERNATIVE (Proposed Action)

Under this alternative, the entire 15,760 acres of the Sabinoso WSA would be recommended nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses would continue, and the WSA would be dropped from management under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1979).

Impacts to Wilderness Values

The wilderness values and special features of the Sabinoso WSA would not be provided long-term protection through Congressional action. Management of the WSA would be subject to change in the long term. However, no impacts to the area's wilderness values are expected due to the low resource development potential.

Impacts to Livestock Grazing

No impacts would occur to livestock grazing operations under this alternative, because use adjustments, additional costs, and restrictions on range improvements are not expected to occur.

APPENDIX 3

SAN ANTONIO WSA (NM-010-035)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The San Antonio WSA is located in Taos County, New Mexico. It lies northwest of San Antonio Mountain, approximately 6 miles southwest of Antonito, Colorado, and 12 miles north of Tres Piedras, New Mexico (Map 1). The WSA is included on a single U.S. Geological Survey (USGS) topographical map--the Los Pinos quadrangle.

CLIMATE AND TOPOGRAPHY

The WSA is composed of broad, gently rolling sagebrush and grass plains bisected north to south by the 200-foot-deep Rio San Antonio Canyon. The WSA ranges in elevation from 7,900 feet (2,633 meters) to 8,835 feet (2,945 meters).

The mean annual temperature for the San Antonio Mountain region is 44° F (6.6° C). The average annual temperature ranges from 80° F (27° C) during the summer months to 8° F (-13° C) in winter. July is usually the warmest month and January the coldest. Cold air drainage along Rio San Antonio Canyon may result in local differences in temperature; the canyon bottom may occasionally have temperatures lower than what is normally recorded for the general area.

The first killing frost occurs around September 20th. Frost conditions can usually be expected to remain until May 30th, resulting in an average of 120 frost-free days.

Annual precipitation ranges from 12 to 15 inches (31 to 38 centimeters) at the south end of the WSA to 9 inches (20 centimeters) in the north. Precipitation is a result of both snowpack and seasonal rainfall. Winds are primarily from the south and southwest.

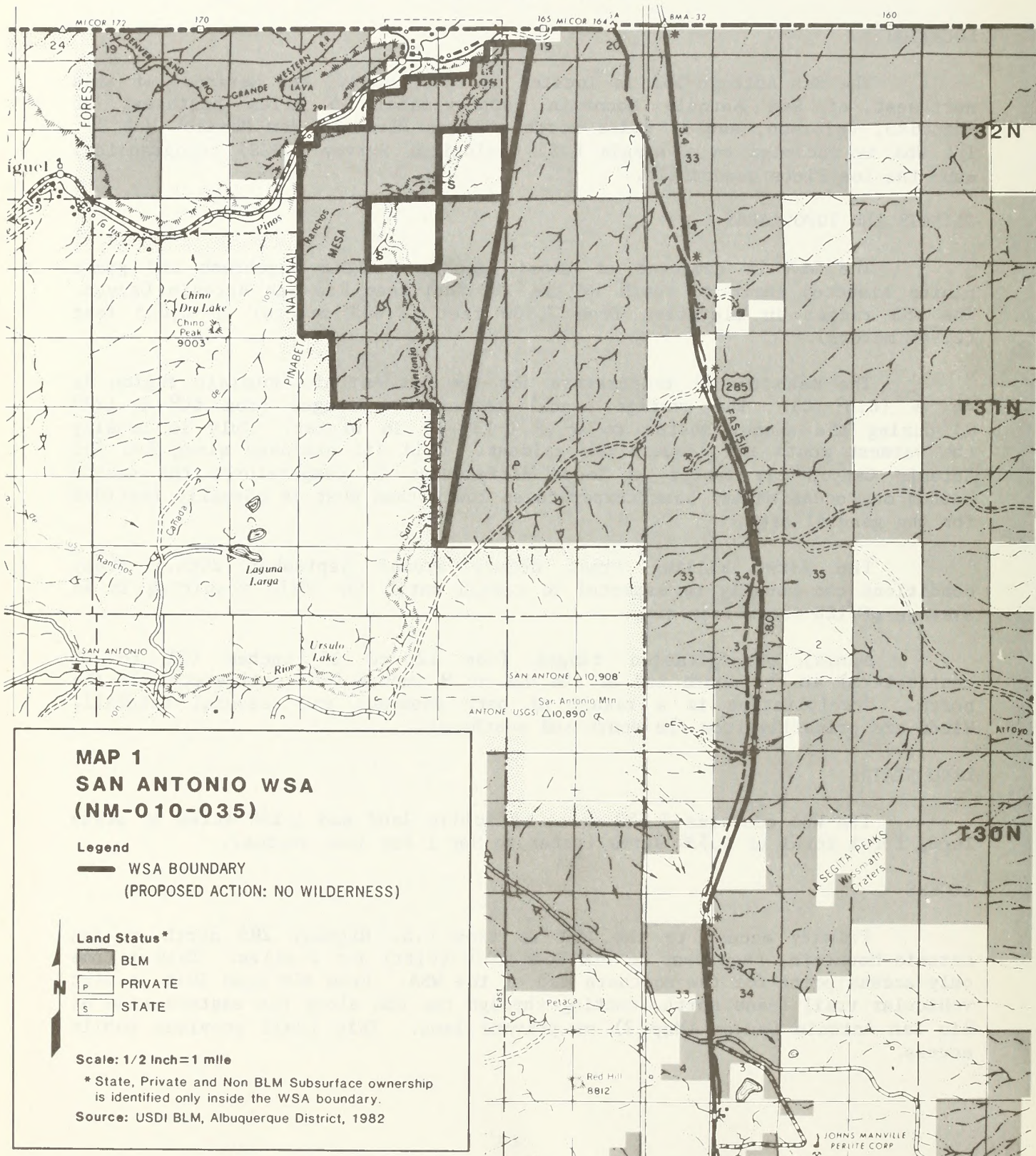
LAND STATUS

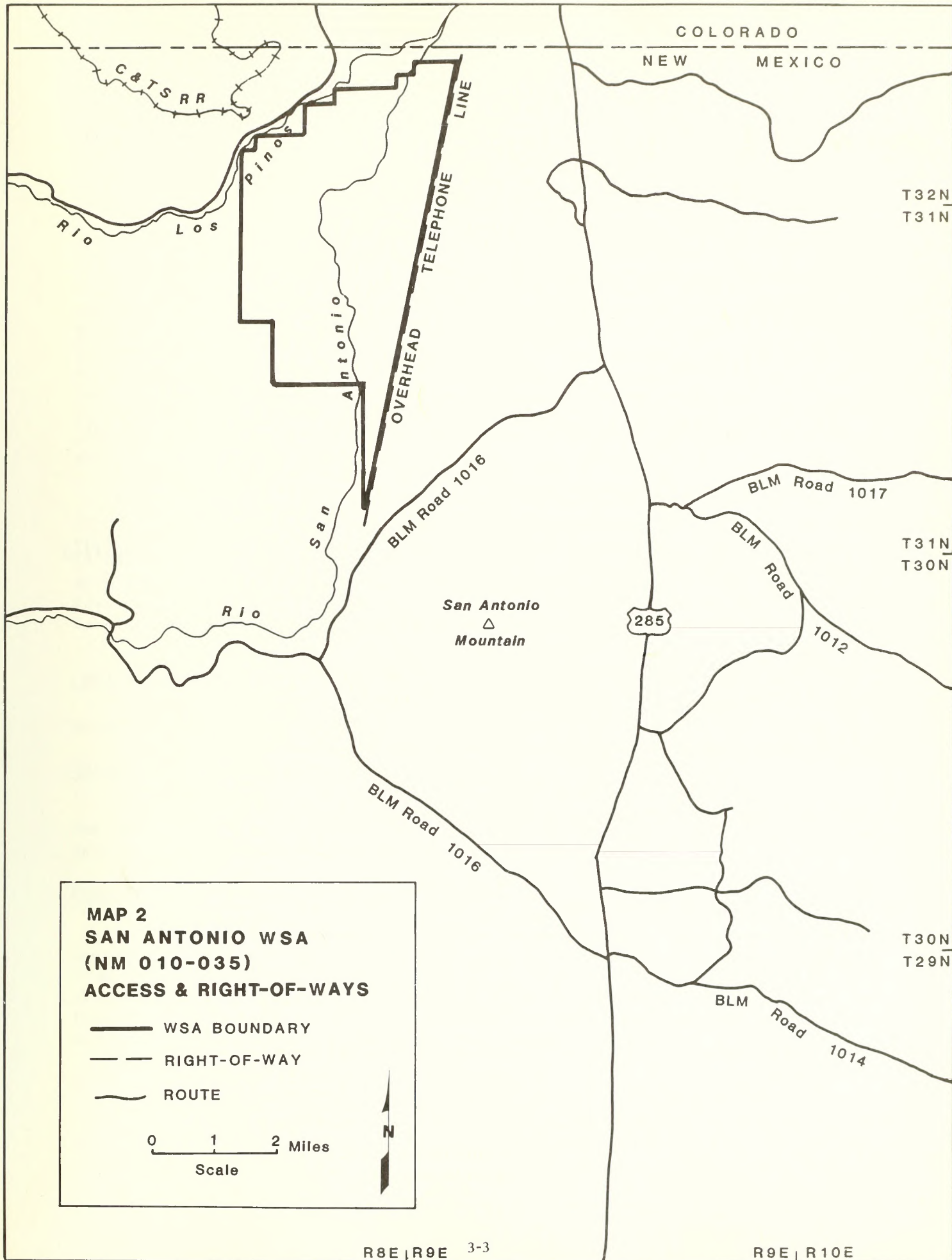
The WSA contains 7,050 acres of public land and 1,280 acres of state land, for a total of 8,330 acres (refer to Map 1 for land status).

ACCESS

Primary access to the WSA is from U.S. Highway 285 north of San Antonio Mountain, then west on BLM Road 1016 (dirt) for 3 miles. This is the only access point for the southern end of the WSA. From BLM Road 1016, a dirt vehicular trail leads north, cutting through the WSA along the eastern side of Rio San Antonio Canyon (Map 2) on private land. This trail provides public access.

COLORADO





PROPOSED ACTION, ALTERNATIVES AND ISSUES

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Wilderness (Proposed Action)
o Manage 7,050 acres as wilderness.	o Manage 7,050 acres without wilderness protection.
- Close eight miles of vehicular ways.	- Vehicle use would be allowed to continue.
- Current levels of authorized grazing use would be maintained.	- Current levels of authorized grazing use would be maintained.

The significant environmental impacts by alternative for each of the major environmental issues are summarized in Table 2.

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives By WSA/Acreage	<u>Major Environmental Issues</u> Wilderness Values
All Wilderness (7,050 acres)	Wilderness protection would maintain the area's wilderness values.
No Wilderness (7,050 acres) (Proposed Action)	Degradation to wilderness values would be minimal due to low resource development potential. Naturalness affected due to vehicle access.

SECTION 2

EXISTING RESOURCES

GEOLOGY

The San Antonio WSA is located within portions of two major structures, the Tusas Uplift and the Rio Grande Trough. The Tusas Uplift, represented by the Tusas Mountains, is a large northwest trending, structurally complex arch that comprises about 20 percent of the WSA and forms a structural divide between the Chama Basin to the west and the Rio Grande trough to the east. The uplift appears to have begun in Middle Paleozoic time and has been tectonically active off and on ever since. Its greatest period of uplift resulted in a central core of Precambrian crystalline rock, mantled by Tertiary sedimentary and volcanic rocks. Within the WSA, volcanic pyroclastics and high energy alluvial deposits rest directly on Precambrian rocks, indicating the Tusas Mountains were a highland throughout Cretaceous and earliest Tertiary times.

The Rio Grande Trough, which occupies the eastern 80 percent of the WSA, is a large northeast-trending rift valley, bounded on the west by the Tusas Uplift and on the east by the Sangre de Cristo Mountains. The trough appears to have formed in the middle Tertiary, when crustal and/or subcrustal tension resulted in a series of parallel tension faults that caused the crust to be down-dropped. Tensional forces resulted in an outpouring of Tertiary flood basalts, which essentially blanket all of the trough found in the WSA.

The Tertiary volcanic rock characteristic of this region is not likely to contain preserved paleontological resources.

WATER

Watershed Characteristics

The WSA lies within the Rio San Antonio and Rio de los Pinos drainages. The surface is generally composed of flat terrain with little overland flow into these drainages.

Water Quantity

The average annual precipitation in the WSA is 14 inches (36 centimeters). Runoff is 0.5 inch per year (1.3 centimeters per year), mostly from high-intensity rainfall events. Recharge occurs rapidly from precipitation, and the Rio San Antonio flow is generally east and northeast from San Antonio Mountain. Streamflow is variable, with limited availability for consumptive use during the summer months.

Water Quality

Due to the flat terrain and high permeability of the soil underlying the basalt, little erosion occurs in the WSA. The water quality of the Rio

San Antonio is unknown, but should be good to excellent based on watershed characteristics.

Ground Water Availability

The WSA is located in the Rio Grande Underground Water Basin. The main aquifer is contoured with the Santa Fe Group of andesite-basalt lava. The water table is estimated to be near the 7,500-foot level, with recharge occurring rapidly from San Antonio Mountain, to the west, and surface precipitation and seepage from Rio San Antonio.

Water quality should be excellent with total dissolved solids of less than 500 parts per million. Yield varies with the permeability of the basalt, but should be adequate for domestic and livestock use.

SOILS

Soils in the WSA are susceptible to both wind and water erosion, and deteriorate rapidly with continued vehicular use. The soil types consist of the following.

The Travelers-Luhon-Stunner Association is composed of shallow to deep soils on nearly level to moderately sloping topography. In this WSA, Travelers soils are shallow, with an underlying base of basalt. Surface textures are stony, cobbly, or gravelly loam.

The Raton-Rock Outcrop-Orejas Association occurs on the basalt foothills of San Antonio Mountain. These soils form a shallow layer over the basalt base, on slopes that are strongly sloping to steep. This association is cobbly and stony throughout.

The Eutroboralfs-Haplobololls Association includes soils that are developing on moderately sloping to steep mountain sideslopes, ridges, and/or mesa tops. These soils form a shallow to moderately deep layer over tuff pumice or rhyolites. Textures range from sandy loam to clay loam.

Slopes in the WSA range from 2 percent to 50 percent with the depth to bedrock ranging from 10 to 60 inches. Permeability (inches per hour) ranges from 0.06-0.6 to 2.0-6.0, with a water-holding capacity (inches/inches) of 0.06-0.09 to 0.17-0.21. Salinity is generally less than four.

VEGETATION

Two major vegetation types exist in the WSA. Approximately 95 percent of the WSA is rolling upland with sagebrush-type vegetation. The remaining 5 percent is a canyon/riparian type with considerable diversity of vegetation.

The rolling upland consists of flat to gently rolling topography with a consistent 700-foot elevation drop from south to north. The gradient drop

is approximately 100 feet per mile. The southwest corner of the WSA has slightly more elevation drop, and is dissected by small drainages with sparsely scattered evergreens. The major plant species found in the rolling upland are sagebrush, broom snakeweed, winterfat, and several varieties of grasses such as blue grama and western wheatgrass.

The Rio San Antonio flows through a narrow gorge from south to north, bisecting the WSA. The canyon walls vary from cliffs to large boulders with areas of shallow soil deposits. There is considerable diversity in vegetation throughout the canyon. Vertical diversity can be seen from the rim to the streambed. Aspect diversity is obvious due to the considerable amount of meandering of the stream and the resulting exposures. Species composition also varies with the overall elevation drop as the river flows northward.

The canyon walls consist primarily of conifer woodlands. The major woodland species are pinyon pine, Rocky Mountain juniper, and Douglas fir.

Lying adjacent to the Rio San Antonio is a riparian woodland. Trees associated with this intermittent stream include cottonwood, willow, and boxelder. Understory shrubs include snowberry, golden currant, gooseberry, and mountain mahogany. Various grass species are found along the riparian zone, including side-oats grama, pinyon ricegrass, Indian ricegrass, Kentucky bluegrass, bottlebrush squirreltail, western wheatgrass, and blue grama. (For further information on vegetation associations in the San Antonio WSA, contact the BLM Taos Resource Area Office.)

Threatened and Endangered Plants

No threatened or endangered plants are presently recognized as being indigenous to this locality or are known to occur within the WSA.

WILDLIFE

Many faunal species occur in this WSA because of the juxtapositional influences of nearby forest lands, and the presence of a very diverse but narrow canyon that bisects the WSA. (A species/occurrence list of faunal species that either reside or frequent the WSA is on file at the BLM Taos Resource Area Office.)

The San Antonio Mountain and Atencio Wildlife Habitat Improvement Areas are located within the WSA. These areas have been reseeded for the benefit of both range and wildlife (refer to Figures 1 and 2).

The rolling upland (sagebrush) vegetation type supports such small game species as the Nuttall's cottontail, the white-tailed jack rabbit, and the coyote. Pronghorn antelope is the single most important big-game species. The region is also utilized as a hunting ground by various species of raptors.



Figure 1 - The San Antonio Mountain Range and Wildlife Area which includes a portion of the WSA.



Figure 2 - The Atencio Wildlife Habitat Improvement Area located at the southern end of the San Antonio WSA. The view to the northwest is of the rim of the Rio San Antonio Canyon.

Important animal species that utilize the riparian zone are the bobcat and the grey fox. The mountain lion may also frequent this portion of the WSA. Various species of raptors utilize the canyon for nesting sites. A diverse number of passerine birds also inhabit the gorge. Due to intermittent flows, the Rio San Antonio does not support a game fishery.

Threatened and Endangered Animals

The New Mexico Department of Game and Fish states that nine threatened or endangered species could possibly occur in Taos County. Of the species listed, the only animals likely to frequent the WSA that have reportedly been sighted are the bald eagle (Haliaeetus leucocephalus), the osprey (Pandion haliaetus), and the peregrine falcon (Falco peregrinus).

VISUAL RESOURCES

The San Antonio Scenic Quality Rating Unit is rated as VRM classes II and III. The topographic relief is divided into two distinct types: (1) flat open plain, and (2) the river canyons of the Rio de Los Pinos and the Rio San Antonio.

Vegetation varies from riparian habitat in the river canyons to dry sagebrush and pinyon-juniper in the flat open plain. Landscape colors are predominantly green, gray, and brown with some variations in the distant backgrounds. The overall feeling is one of open expanses, contrasted by the deep incisions in the flat plains produced by the two river canyons that abruptly drop out of sight.

The Class II rating for the river canyon areas denotes that any change in the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape. The Class III rating for the open plains area indicates that changes in the basic elements caused by the management activity may be evident, but should remain subordinate to the visual strength of the existing character. (However, the entire WSA is being managed during the wilderness review process as a Class II due to the non-impairment criteria.)

CULTURAL RESOURCES

The quantity and type of cultural resources in the WSA are not known because the WSA has not been surveyed. BLM personnel have noted non-diagnostic lithics of both local and exotic materials along the river, as well as discarded tin cans throughout the WSA. Historic sheepherding camps consisting of basalt wall alignments exist, but no standing structures are known within the WSA.

The density of cultural resources in the WSA is expected to be low. The range of types of cultural resources that may be present includes archeological manifestations of PaleoIndian campsites (about B.C. 9500 to B.C.

5500, to A.D. 400), Anasazi campsites (about 400 to 1400 A.D.), Comanche and Apache campsites from the 17th, 18th, and 19th centuries, and sheepherder campsites from the 19th and 20th centuries. Individual sites will have to be evaluated when they are located.

AIR QUALITY

Air quality in the WSA is generally good. Winds are primarily from the south and southwest. Some pollution from scoria mining operations on the northeast side of San Antonio Mountain, occurs when the scoria dust is lifted by strong winds.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

Energy Minerals

Leasable

The U.S. Geological Survey has included the far western portion of the San Antonio WSA within the Los Pinos Oil and Gas District as prospectively valuable for oil and gas. This is a broad classification, however, and the Taos Resource Area's Minerals Resource Inventory (Contract No. YA-553-CTO-1088, 1981) indicates a lack of favorable reservoir rocks, which would seem to preclude the formation and/or retention of petroleum in this specific location (refer to Table 3). The economic potential, therefore, is Low. There are presently no leases.

TABLE 3

MINERAL POTENTIAL
SAN ANTONIO WSA

Commodity	Associated Environment	Mineral Potential	Acreage ^{a/}
Uranium	Tertiary Volcanics	Low	NC
Lead, Zinc, Copper, Molybdenum	Precambrian igneous/metamorphic complex	Low	NC
Oil and Gas	Upper Cretaceous sedimentary rocks	Low	NC

Source: Tecolote Corporation. 1981. Taos Mineral Resource Inventory.

Note: ^{a/} Acreages on areas of low potential were not calculated (NC).

Locatable

Sporadic uranium exploration has occurred in the general vicinity of the WSA (although outside its boundaries), but no discoveries were made. While the possibility of finding uranium exists within the WSA, the lack of

favorable host rocks - e.g., Mesozoic, early Cenozoic Sandstones, or granitic intrusions - would seem to preclude its discovery (refer to Table 3). No mining claims exist in the WSA.

Non-Energy Minerals

Leasable

Since virtually all other non-energy leasable minerals are found in sedimentary deposits and the WSA contains a very thin sedimentary sequence, the potential for the discovery and/or development of these types of deposits appears to be very low (refer to Table 3). The lack of interest in these minerals would seem to confirm this conclusion, as no leases have been issued.

Locatable

Because the Precambrian rocks that make up the core of the Tusas Mountains are complex and highly metamorphosed, there is a possibility of a massive sulfide (e.g., copper, lead, zinc, molybdenum) occurrence within or near the WSA. Because no exploration activity has taken place, more data is required before an evaluation of the potential for the occurrence of massive sulfides can be made.

The fact that flood basalts are generally not known to contain appreciable amounts of metallic minerals, as well as the apparent lack of major hydrothermal alteration zones or granitic intrusions, would seem to preclude the occurrence and development of metallic mineral deposits (refer to Table 3).

Non-metallic deposits are not expected to occur in basaltic deposits. Consequently, the potential for the occurrence of any significant locatable mineral deposits, other than massive sulfides, is considered to be low.

Salable

Because the San Antonio WSA is essentially all Tertiary flood basalt, with perhaps some basaltic cinder cones, the potential for the development of salable mineral deposits other than cinders (scoria) and crushed rock is considered to be low.

WATERSHED

Sources of water for wildlife and livestock within the boundaries of the WSA are limited to several catchments and the intermittent flows of the Rio San Antonio.

LIVESTOCK GRAZING

Allotments

Within the San Antonio WSA are four allotments (Map 3). All are cattle allotments except Allotment 646, which has a dual sheep-cattle permit. The primary season of use is spring-fall. Any revision of grazing periods would stress primarily fall-winter use. (refer to Table 4 for more information.)

TABLE 4
RANGE ALLOTMENT SUMMARY

Allotment Number	Allotment Acres	AUMs	WSA Acres	WSA AUMs	Percent of AUMs in WSA
583	4,852	426	2,380	219	51
584	3,375	445	1,570	220	49
632	1,870	140	1,870	140	100
646	4,343	<u>446</u>	<u>1,230</u>	<u>126</u>	28
TOTALS		1,457	7,050	705	

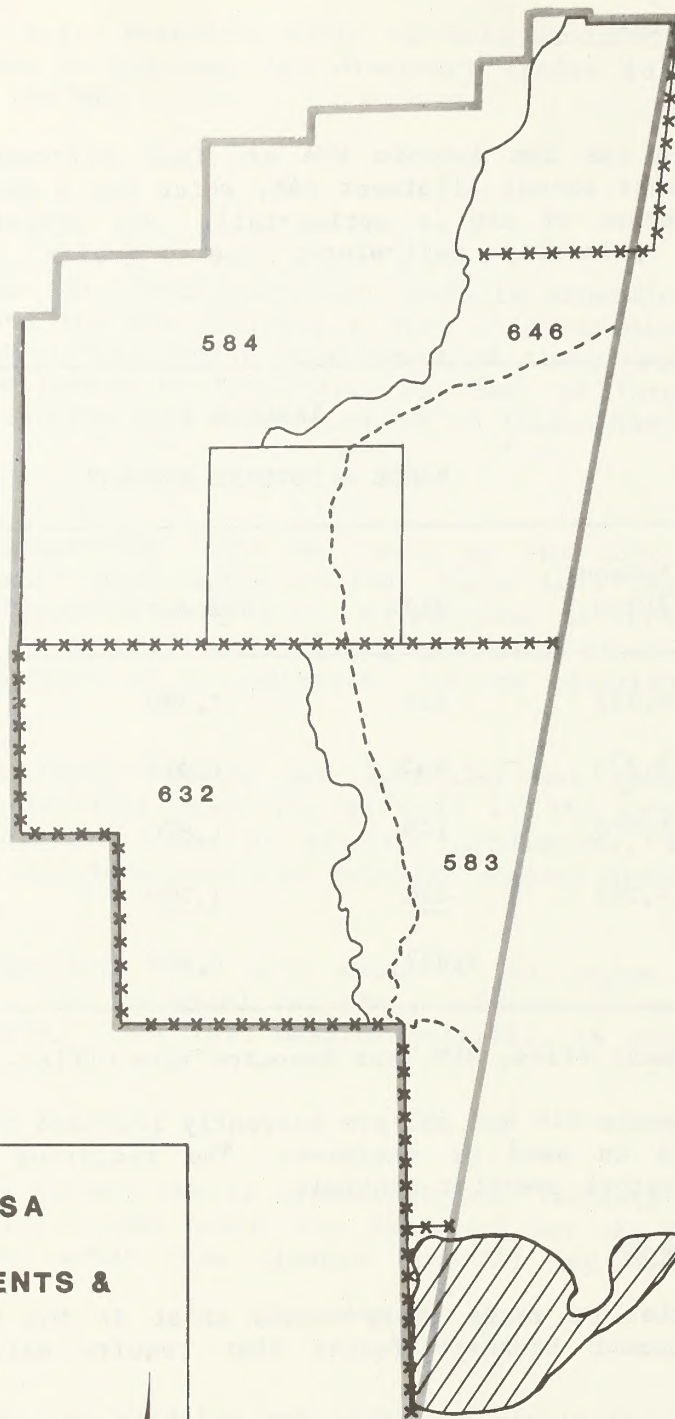
Source: Allotment files, BLM Taos Resource Area Office.

Allotments 646 and 583 are currently included in Allotment Management Plans that are in need of revision. The revisions are primarily due to changes in livestock operator control.


Range Improvements

A number of range improvements exist in the WSA (Map 3). Most of them are allotment boundary fences that require maintenance on an annual basis.

Access to these improvements is primarily by off-road travel utilizing no established roads.

T32N
T31NT31N
T30N

MAP 3
SAN ANTONIO WSA
(NM-010-035)
GRAZING ALLOTMENTS &
IMPROVEMENTS

- WSA BOUNDARY
- *** FENCE
- VEHICULAR TRAIL
-  SEEDING
- 632 ALLOTMENT NUMBER
- ALLOTMENT BOUNDARY

0 1/2 1 Miles
 Scale

Potential Improvements

Specific projects have not yet been proposed for this WSA. However, water developments may be proposed in the form of well and catchment installations for livestock and wildlife use.

FOREST PRODUCTS

No timber harvest or vegetative sales areas exist in the WSA.

RECREATION

Very little recreation activity occurs in the San Antonio WSA. The activity that does occur includes ORV use and hiking in the river canyons. Fishing is minimal due to the ephemeral nature of the Rio San Antonio.

San Antonio Mountain, adjacent to and south of the WSA, receives heavy use by hunters during elk, deer, and antelope hunting seasons. (Additional information on hunting pressure, harvest, and success in the Tres Piedras Management Unit, which includes the WSA, is available at the BLM Taos Resource Area Office.)

EDUCATION/RESEARCH

No research or education areas exist in the WSA.

NATIVE AMERICAN USES

No current use of the WSA by Native Americans is known at this time.

REALTY ACTIONS

The only right-of-way present in the WSA is along the eastern boundary and is for a telephone line (Map 2). No withdrawals, easements, or permits exist within the WSA.

WILDLIFE

A wide variety of uses by wildlife occur within the WSA. Only those uses of significant value or interest are discussed here. The primary uses are by big game, birds of prey, and predators. The WSA includes portions of the San Antonio Mountain and Atencio Wildlife Improvement Areas.

Big Game

Virtually all of the WSA can be considered yearlong habitat for pronghorn antelope. Herd numbers vary between 40 and 120 as the animals travel into and out of the WSA.

About 50 percent of the WSA is an extremely important elk wintering ground and migration route. Little or no use by elk occurs in the summer months or in the northeastern portion of the WSA.

The gorge and southwest corner of the WSA can be considered year-round deer habitat. It is probably used more heavily during the winter months. The Rio San Antonio and the small drainages to the west provide most of the cover and browse for deer in the WSA.

Birds of Prey

A wide variety of birds of prey frequent this WSA. The most important use is for nesting in the canyon by American kestrels, prairie falcons, and red-tailed hawks.

The canyon has not been extensively inventoried, so other species may use this location. The undisturbed nature of the canyon provides an excellent location for prairie falcons to raise their young. Other probable nesters include the Cooper's hawk and the great horned owl.

Predators

Coyotes and gray fox are the primary fur-bearers using the WSA. The extent of trapping is not known. It is likely that the southern portion of the WSA may be frequented by mountain lion.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

The San Antonio WSA is natural in its general appearance. The Rio San Antonio Canyon is the single most important factor in the feeling of naturalness for the area (refer to Figures 3 and 4). The views and impressions below the canyon rim are influenced by the natural screening of the canyon walls and the lush riparian vegetation. This contrasts with the vast open expanse above the canyon rims where impacts of human activities are more visible (these include range improvements, vehicular routes, a scoria mining operation, and utility lines.)

The 7,050-acre San Antonio WSA contains approximately 6 miles of vehicular routes that are used primarily for access to range improvements requiring maintenance on an annual basis, and for access to the state inholdings. Physical access to Rio San Antonio Canyon is also provided by these routes for recreational use.

A scoria mining operation is located 2 1/2 miles southeast of the WSA, and is particularly noticeable above the canyon rim when winds raise the light red and black dust at the mine site.

The most noticeable human impact is the telephone line which extends for the entire 7-mile eastern boundary of the WSA. The line is only visible, however, from above the Rio San Antonio Canyon rim.

The cumulative effects of these impacts is minimal when viewed from below the Rio San Antonio Canyon rim. Above the canyon rims, wide open space allows more human impacts in and adjacent to the WSA to be visible. The amount and degree of impacts present do not appreciably reduce the naturalness of the WSA.

Solitude

The size, general lack of screening from vegetation and terrain, proximity to U.S. Forest Service recreation use areas (for hunting and camping) and to rural residential areas to the north diminish the opportunities for solitude in this WSA.

Opportunities for solitude are greatest in the area of the WSA below the rim of Rio San Antonio Canyon. Access to the canyon is limited, so fewer encounters with humans are made. Above the canyon rims, more human activity is encountered due to the closeness of U.S. Highway 285, ORV access to U.S. Forest Service recreational lands, and ranch activity in the WSA.

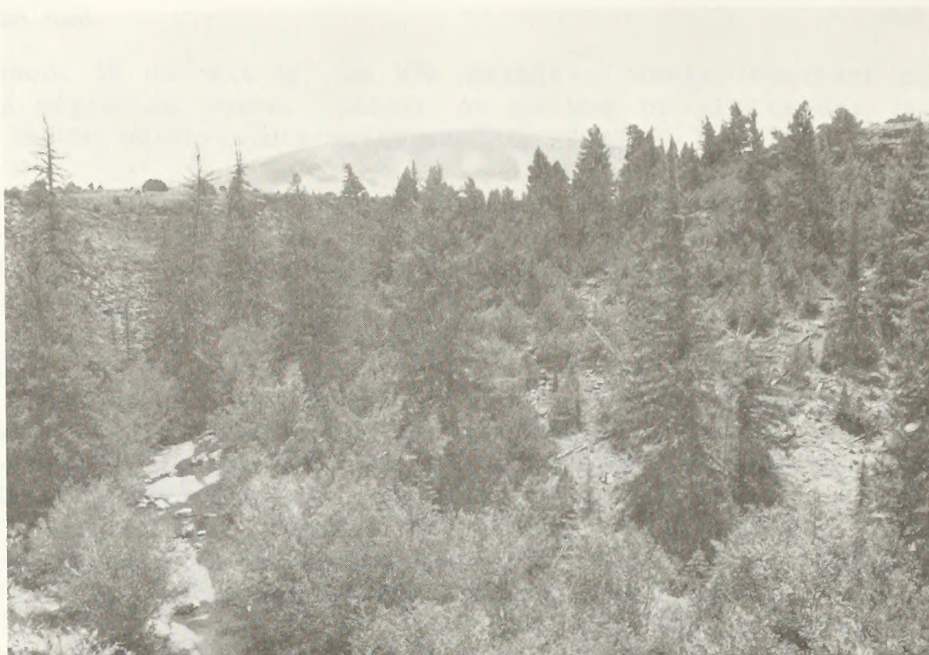


Figure 3 - View from Rio San Antonio Canyon looking southeast at San Antonio Mountain.



Figure 4 - The Rio San Antonio flows through the canyon from October through June. Irrigational diversions upstream dry up the creek during the summer months.

These intrusions on solitude are mitigated in the canyon by the vegetative and topographic screening which allows the user to find outstanding opportunities for solitude.

Opportunities for Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation activities are limited in the WSA due to its small size and location near human activities. Recreational opportunities include elk, muledeer, and antelope hunting in the vicinity of San Antonio Mountain, located 2 miles south of the WSA. Hiking and camping are potential activities in Rio San Antonio Canyon, but fishing is affected by the ephemeral nature of the stream.

Special Features

The ephemeral waters of the Rio San Antonio and the topographic contrast of the canyon cutting through the open plains make up the WSA's most outstanding special features. The viewing of wildlife that frequent the Rio San Antonio during the flow season (October through June) also makes the WSA important, although the actual wildlife habitat areas are concentrated on San Antonio Mountain on U.S. Forest Service lands.

The scenic value of the riparian vegetation in the canyon, which contrast with the dry open sagebrush plain located above and around the canyon rim, may be considered a special feature.

Multiple Resource Benefits

The San Antonio WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long term protection for these natural values than would administrative designations available to the BLM.

Diversity in the National Wilderness Preservation System

Ecotype/landform diversity has been analyzed using the Bailey-Kuchler system in order to classify the potential natural vegetation expected to occur in the San Antonio WSA. The Bailey-Kuchler System classifies the San Antonio WSA as being in the Rocky Mountain Forest Province with a potential natural vegetation of approximately 6698 acres of Great Basin Sagebrush and 352 acres of Juniper-pinyon woodlands.

Distance from Major Population Centers

The WSA is within a day's drive of Albuquerque, New Mexico. Albuquerque is identified in the 1980 census as a Standard Metropolitan Statistical Area.

MANAGEABILITY

An analysis of the manageability of the San Antonio WSA as wilderness must include consideration of state lands within the WSA boundaries, legal and physical access, rights-of-way, uses of adjacent private and U.S. Forest Service lands, and topography.

Surface inholdings include 1,280 acres of State of New Mexico lands. The primary ingress and egress points for the WSA pass through these state sections (Map 1), so reasonable access is available to these inholdings.

The flat, open terrain of the WSA allows for almost unlimited access by ORVs from adjacent U.S. Forest Service lands, where hunter pressure is very high. Upon designation, the entire WSA would need to be signed and patrolled to prevent ORV access, because topography does not provide a natural barrier. Limiting access in this manner would be expensive.

The WSA appears to have low potential for mineral development, so private or state mineral rights would not likely create incompatible uses in the WSA.

"Grandfathered" rights in the WSA are associated with livestock operations and maintenance of range improvements. All existing livestock operations may continue in the same manner and degree as in the past.

Boundary adjustments would not enhance wilderness manageability of the WSA. The lack of topographical barriers to vehicular travel, combined with poorly defined natural boundaries, could create trespass problems as the result of existing use patterns of hunters and ORV users in the area. Public education and increased levels of patrol could be expected to reduce, but not eliminate, these access and use problems.

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness review process was gained during review of the Rio Grande Management Framework Plan (1979), input during the Taos Resource Area Roadless Study and the WSA recommendation phase, and in the establishment of the Off-Road Vehicle Designation Plan which included the San Antonio WSA. Two open houses were held for public input regarding the San Antonio WSA and other WSAs, in the statewide study. One was held in Albuquerque, New Mexico on April 28, 1983, and the other in Taos, New Mexico on April 26, 1983.

During the public comment period on the Albuquerque District Wilderness Draft Environmental Assessment (March 1983), 15 public inputs were received on the San Antonio WSA. Most of these inputs favored wilderness designation of the area. These comments were of a general nature and were based primarily on the remote location of the San Antonio River Canyon in an otherwise wide-open plain area.

Those who expressed support for wilderness designation discussed the need for a natural habitat for antelope and other game. This need is increased because of the WSA's close proximity to the San Antonio Mountain Range and Wildlife Management Area (where use by motor vehicles is limited). Support for wilderness was also based on the need to preserve the WSA's characteristic western wheatgrass range and high rolling grasslands, which are considered under-represented in the National Wilderness Preservation System.

Four inputs opposed designation. Those opposed to the potential designation of the San Antonio WSA as wilderness expressed concern for public land becoming unavailable to ORV users, hunters, and mineral development, and for increasing the restrictions on livestock grazing within a designated wilderness area.

It was also expressed that the WSA does not meet "wilderness specifications", and that protection could be afforded by monitoring ORV use and designation as an Area of Critical Environmental Concern.

These comments presented no new perspectives or information regarding the wilderness characteristics of the WSA that would cause a change in the BLM's evaluation and proposal for non-wilderness status of the San Antonio WSA.

SUMMARY OF SCOPING

Table 5 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental

Assessments. Unless otherwise shown in Table 5, issues related to cultural resources, air quality, education and research, water resources, recreation, visual resources, realty actions, soils, vegetation, and wildlife were also considered in the District Final Environmental Assessment and because little or no environmental impacts were identified, issues relating to these resources are not analyzed in this WAR.

TABLE 5
SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
None	
Issues Raised and Set Aside	Reasons for Not Considering a Detailed Analysis
Timber Sales and Fuelwood Cutting	No significant impact was identified since there are presently no plans for commercial timber or fuelwood sales in the WSA.
Livestock Grazing	No significant impact was identified to livestock grazing; however, this issue will be discussed because of Statewide interest.
Minerals	No significant impact was identified for minerals because of low potential.
Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy (No Action).
Issues Selected For Detailed Analysis	
The quality of the area's wilderness values is a major issue of concern in the San Antonio WSA.	

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses two alternatives for the San Antonio WSA: the All Wilderness Alternative, and the No Wilderness Alternative (No Action).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 7,050 acres of public land within the San Antonio WSA would be recommended as suitable for wilderness designation.

If the San Antonio WSA is designated as wilderness, the existing uses and activities and potential uses (identified in Section 3 of this document) would be managed under the constraints of the Wilderness Management Policy (USDI, BLM 1981).

Impacts to Wilderness Values

Under the All Wilderness Alternative, the wilderness values present in the WSA would benefit significantly from the added long-term protection of Congressional designation. Naturalness, solitude and recreation opportunities would be maintained.

Impacts to Livestock Grazing

Wilderness designation would allow existing grazing operations to continue, but new range developments would only be allowed if they did not degrade wilderness values. Since existing operations are "grandfathered" and no new developments are currently planned for construction, no significant impact would occur to livestock grazing under the All Wilderness Alternative.

NO WILDERNESS ALTERNATIVE (Proposed Action)

Under the No Action Alternative, which would recommend the entire WSA as unsuitable for wilderness designation, management would continue in accordance with the existing Rio Grande Management Framework Plan, the ongoing Taos Resource Management Plan, and the ORV Designation Plan for the area. Those existing and potential uses (refer to Section 3 of this appendix) would continue under this alternative, after the WSA was removed from restrictions of the Interim Management Policy and Guidelines for Land Under Wilderness Review (1983).

Impacts to Wilderness Values

Nondesignation would not significantly impair the wilderness values of the WSA. These wilderness values are considered marginal so the impact to them is expected to be minimal under this alternative. Also, a low potential for mineral development exists, and no other significant uses have been identified that would result in the introduction of man-made features or the modification of the natural character of the WSA.

Impacts to Livestock Grazing

No impacts to livestock grazing are expected to occur as a result of this alternative. All rangeland improvements could be checked and maintained on a convenience basis using motorized equipment.

APPENDIX 4

CABEZON WSA (NM-010-022)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The Cabezon Wilderness Study Area (WSA; NM-010-022) contains approximately 8,118 acres of public land, and is located approximately 15 air miles due west of San Ysidro, New Mexico. It is situated to the north of Mesa Prieta and to the northeast of Mesa Chivato, in the valley of the Rio Puerco (refer to Map 1). It is bordered on the north and south by maintained roads, on the west by property boundaries and a maintained road, and on the east by a combination of a powerline right-of-way (NM-559354) and a maintained road (refer to Maps 1 and 2). The U.S. Geological Survey topographic map that covers this area is Cabezon Peak (7.5 minute quadrangle).

CLIMATE AND TOPOGRAPHY

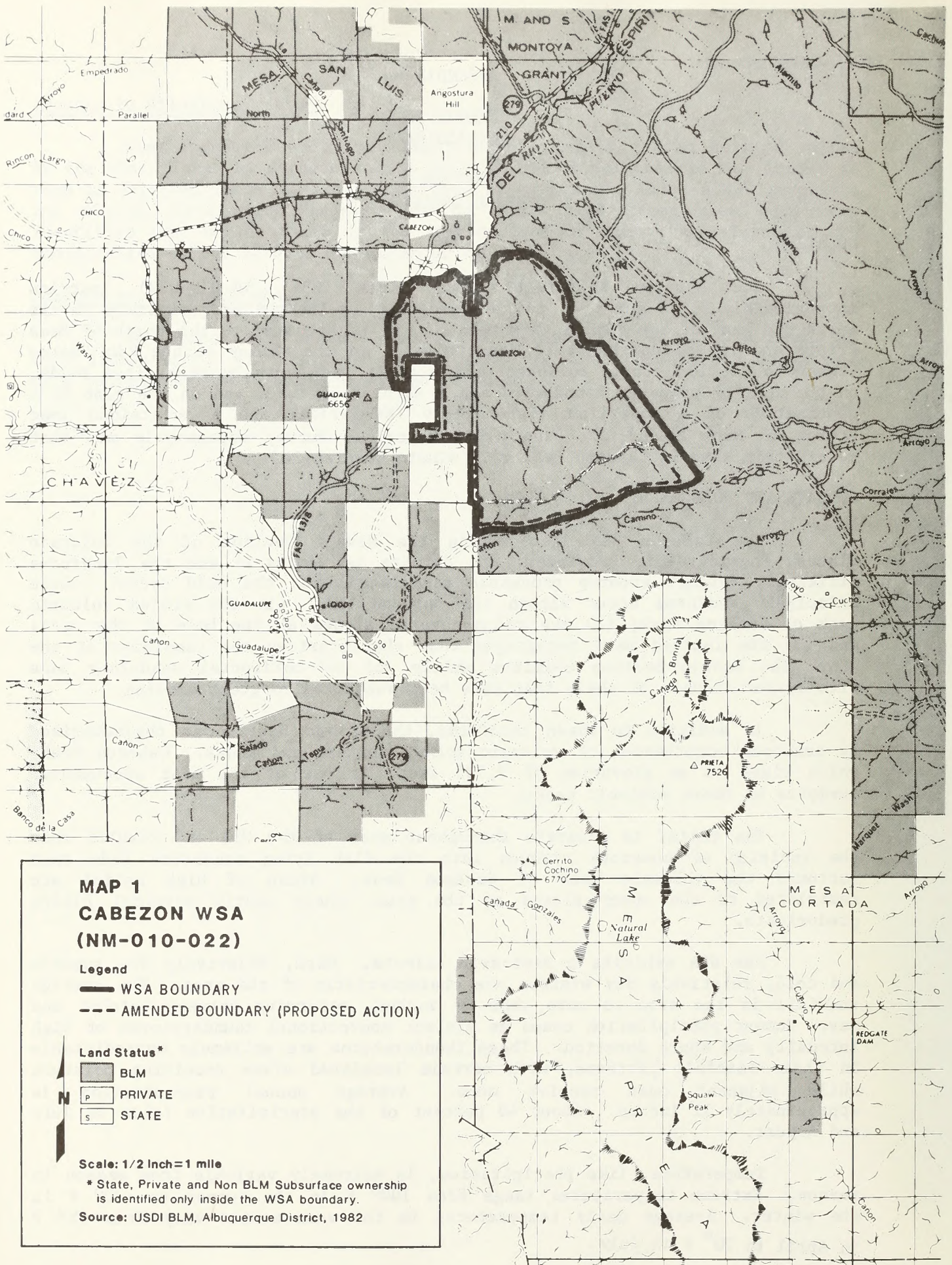
The Cabezon WSA lies within the Navajo Section of the Colorado Plateau Physiographic Province. The climate is semi-arid and the landforms strikingly reflect erosive processes associated with the arid cycle. Three principal landforms occur within the Cabezon WSA: (1) the eroded volcanic neck of Cabezon Peak; (2) the talus-covered slopes at the base of the neck; and (3) the incised mesa topography that characterizes the remainder of the WSA. The Navajo Section consists mainly of sub-horizontal sandstone beds with lesser amounts of shale that have been subjected to great erosion.

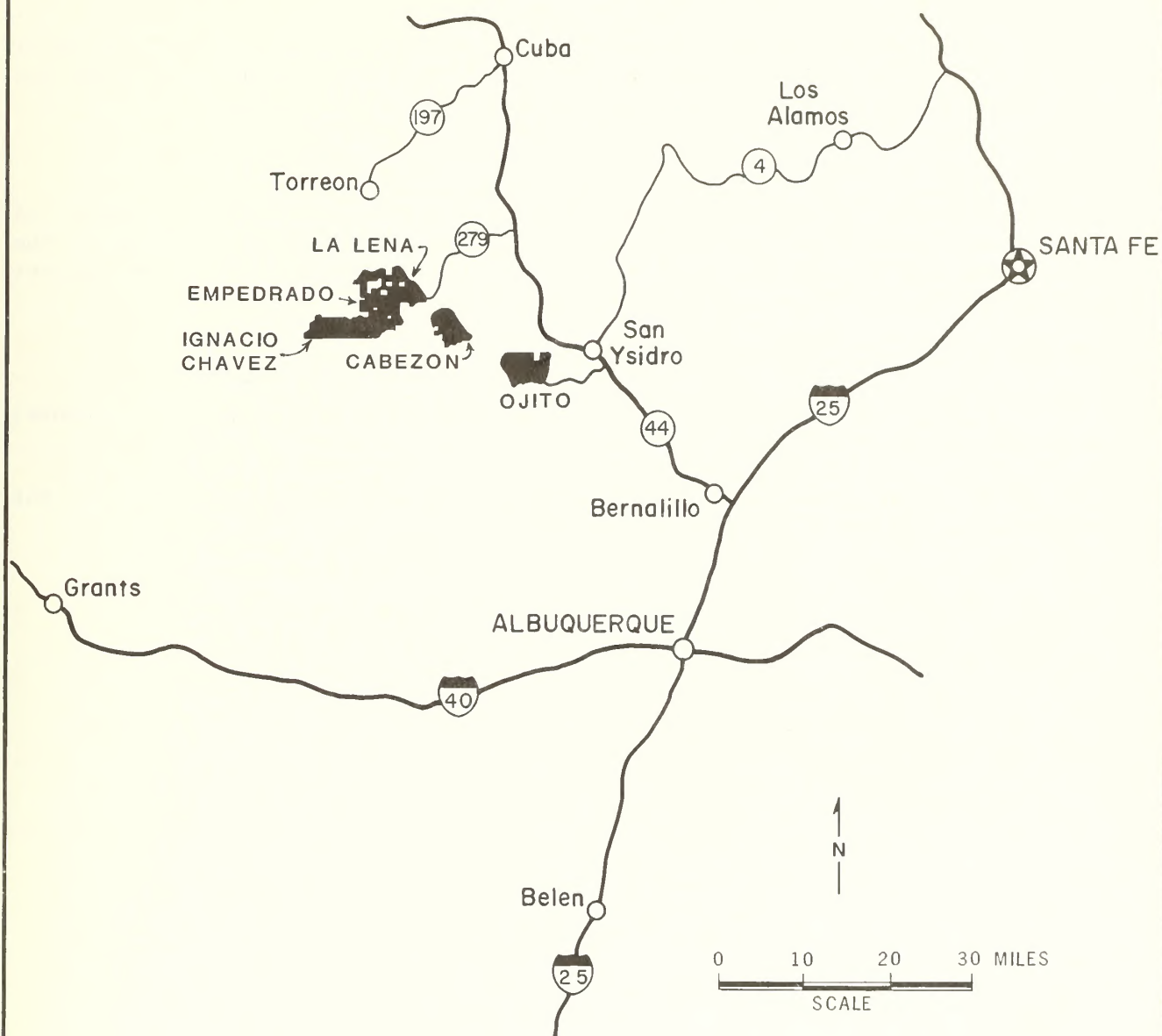
In addition to these landforms, the Navajo Section is characterized by numerous occurrences of volcanic necks, buttes, and mesas. Cabezon Peak, which rises to an elevation of 7,785 feet, is one of the most spectacular examples of these volcanic necks.

The relief is moderate throughout most of the WSA and results from the incision of numerous arroyos into the flat lying sandstone beds that surround the volcanic neck of Cabezon Peak. Areas of high relief are restricted to the upper slopes of the peak, where nearly vertical cliffs predominate.

The WSA exhibits a semi-arid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic of the area. The average snowfall in the area is more than 37 inches, occurring between October and May. Summer precipitation comes as violent convectional thunderstorms of high intensity and short duration. These thunderstorms are extremely unpredictable in their rainfall patterns, with certain localized areas receiving moisture while adjacent ones receive none. Average annual precipitation is approximately 11 inches. About 40 percent of the precipitation falls in July and August.

Temperature, like precipitation, is extremely variable from season to season. Extreme temperatures range from 102° F in the summer to -20° F in the winter. Average daily temperatures in the warm months vary from 45° F in April to 70° F in July.





LEGEND

WILDERNESS STUDY AREAS

MAP 2

GENERAL LOCATION

The average growing season is approximately 160 days, beginning in May and ending in October. The full 160-day season is seldom realized because available moisture, rather than temperature, is the limiting factor.

LAND STATUS

The Cabazon WSA is made up of 8,118 acres of public land. The major portion of the WSA contains land acquired by the federal government under the antidegradation Act of 1937. The remaining acres are public domain lands.

ACCESS

This WSA can be reached by proceeding southwest off State Highway 44 onto a county-maintained gravel road, and then on maintained dirt roads to the north, east and south. Part of the access to the west of the WSA crosses State of New Mexico land (refer to Maps 1 and 2).

PROPOSED ACTION, ALTERNATIVES, AND ISSUES

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

The significant environmental impacts by alternative for each of the environmental issues are summarized in Table 2.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Wilderness
<p>oManage 8,118 acres as wilderness.</p> <p>-8,118 acres would be closed to mineral location.</p> <p>-8,118 acres of moderate oil and gas potential would be closed to exploration.</p> <p>-Close 2 3/4 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 4 dirt tanks and replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p> <p>-Attempts would be made to acquire 1,280 acres of state land contiguous with the WSA.</p>	<p>oManage 7,984 acres as wilderness.</p> <p>-7,984 acres would be closed to mineral location.</p> <p>-7,984 acres of moderate oil and gas potential would be closed to exploration.</p> <p>-Close 2 3/4 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 4 dirt tanks and replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p> <p>-Attempts would be made to acquire 1,280 acres of state lands contiguous to the WSA.</p> <p>oManage 134 acres with out wilderness protection.</p> <p>-134 acres would be open to future mineral location.</p> <p>-134 acres of moderate oil and gas potential would be open for exploration.</p> <p>-Current grazing levels would continue.</p> <p>-Vehicle use would to be allowed to continue on 134 acres.</p>	<p>oManage 8,118 acres without wilderness protection.</p> <p>-8,118 acres would be open for mineral location.</p> <p>-8,118 acres of moderate oil and gas potential would be open for exploration.</p> <p>-Vehicle use would be allowed to continue.</p> <p>-Current grazing levels would continue.</p> <p>-No special emphasis would be made for acquisition of state land contiguous with the WSA.</p>

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Major Environmental Issues			
	Wilderness Values	Oil and Gas Exploration	Recreation Off-Road Vehicle (ORV) Use	Rights-of-Way
All Wilderness (8,118 acres)	<ul style="list-style-type: none"> -Maintain Cabezon's natural character. -Maintain opportunities for solitude and primitive and unconfined recreation, particularly the popular opportunities for climbing -Protect soils susceptible to erosion and vegetation throughout the WSA. -Protect 2 rare cactus species. -Maintain current high scenic quality A. -Maintain important historic geographic landmark. -Maintain current undisturbed condition of cultural sites, including National Register site. -Maintain current wildlife habitat that supports golden eagles, red-tailed hawks, sparrow hawks, bobcat, gray fox, mule deer and antelope. -Retain, through long term protection, the "natural laboratory" setting used by universities to study geology. -Maintain the natural setting upon which Native American uses are often based, including a Native American shrine. 	<ul style="list-style-type: none"> -Eliminate exploration options on 8,118 acres of moderate potential oil and gas. 	<ul style="list-style-type: none"> -2 3/4 miles of vehicle ways would be closed to recreation uses, including 2-wheel, 3-wheel and 4-wheel vehicles. This will impact backcountry exploration, vehicular camping and some hunting. 	<ul style="list-style-type: none"> -Could result in rerouting of future powerlines and pipelines, which would be more costly to construct.
Amended Boundary (7,984 acres) (Proposed Action)	<ul style="list-style-type: none"> -Same as All Wilderness Alternative. Although naturalness would be affected on the 134 acres released wilderness values are marginal along the 1/8 mile modification. Therefore, no overall impact on wilderness values would result. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative, except the 134 acres eliminated could be explored for oil and gas. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative. 	<ul style="list-style-type: none"> -There would be no impact because it would allow additional space along the northeast border of the WSA for future powerline and pipeline rights-of-way.

TABLE 2 (Concluded)

Alternative by WSA/Acreage	Major Environmental Issues			
	Wilderness Values	Oil and Gas Exploration	Recreation Off-Road Vehicle (ORV) Use	Rights-of-Way
No Wilderness (8,118 acres)	<ul style="list-style-type: none"> -Over the long term, anticipated mineral exploration and increased ORV activity, would increase road network and access throughout the WSA. This access would attract activities which would: -Degrade Cabezon's natural character by wood cutting, removal of natural vegetation, creation of informal campsites, trash dumping. -Reduce opportunities for solitude and primitive and unconfined recreation, particularly the very popular climbing experience. -Threaten fragile soils and vegetation throughout the WSA, including 2 rare cactus species. -Degrade currently high scenic quality A. -Degrade important historic geographic landmark. -Disturb nesting seasons for both game and non-game species, diminishing existing populations. -Degrade current wildlife habitat supporting golden eagles, red-tailed hawks, sparrow hawks, bobcat, gray fox, mule deer and antelope, diminishing existing populations. -Encourage poaching. -Degradation of cultural resources, including National Register site. -Degrade potential for use as a "natural laboratory", used by universities to study geology. -Modify the natural setting upon which many Native American uses are often based, including a Native American shrine. 	No Impact.	No Impact.	No Impact.

SECTION 2

EXISTING RESOURCES

GEOLOGY

A discussion of the geology of the Cabezon WSA is contained in Captain C.E. Dottan's report of 1885. Dottan's discussion includes the following comments:

If we stand upon the Eastern Brink of Mount Taylor Mesa we shall overlook the broad valley of the Puerco (east). (The spectacle is a fine one and in some respects extraordinary). The edge of the mesa suddenly descends by succession of ledges and slopes into the (rugged and highly diversified) valley-plain below. The country beneath is a medley of low cliffs or bluffs, showing the light browns and pale yellows of the lower and middle Cretaceous sandstones and shales. Out of this confused patchwork of bright colors rise several...objects of remarkable aspect. They are apparently inaccessible eyries of black rock, and at a rough guess, by comparison with the known altitudes of surrounding objects, their heights above the mean level of the adjoining plain may range from 800 to 1,500 feet. The blackness of their shade may be exaggerated by contrast with the brilliant colors of the rocks and soil out of which they rise, but their forms are even more striking. It is rare to find such shapes in Plateau country, much more so elsewhere. It is obvious at once that these rocks are of volcanic origin; and the experienced geologist who has traveled much in these regions will recognize their significance at a glance

Hunt's description of Cabezon Peak, contained in his 1938 report on the igneous geology and structure of the Mount Taylor volcanic field, states:

Cabezon Peak . . . is the highest and most impressive of the necks, rising nearly 2,000 feet above the Rio Puerco, and the protruding basaltic core is about 1,500 feet in diameter...The...rocks intruded by the neck are Cretaceous sandstone and shale that dip gently northward, and although the contact is not exposed there is no indication of deformation by the intrusion. The exposed neck is nearly cylindrical and is about 800 feet high.

ENERGY AND MINERALS

The volcanic neck that is Cabezon Peak represents a solidified column of once-molten rock that intruded through at least 6,000 feet of sedimentary rock layers as it made its way to the surface. These sedimentary layers range in age from Pennsylvanian to Cretaceous (Figure 1) and are known regionally to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humates, and clay. However, in the WSA itself, the Dakota Formation is the only layer known to contain a mineral commodity of moderate potential: oil and gas.

FIGURE 1
STRATIGRAPHIC SECTION,
CABEZON, EMPEDRADO, IGNACIO CHAVEZ,
LA LENA, AND OHITO WILDERNESS STUDY AREAS

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER		LITHOLOGY
CENOZOIC	QUATERNARY		PEDIMENT		
	TERTIARY		SANTA FE		
	CRETACEOUS		PICTURED CLIFFS		
		LEWIS			
		CLIFF HOUSE			
		MENEFEE			
		POINT LOOKOUT			
		CREVASSE CANYON			
		GALLUP			
		MANCOS			
		DAKOTA			
	JURASSIC	MORRISON FORMATION	BRUSHY BASIN		
			WESTWATER CANYON		
			RECAPTURE		
		SAN RAFAEL	BLUFF		
SUMMERVILLE					
TODILTO					
ENTRADA					
MESOZOIC	TRIASSIC	CHINLE FORMATION	UNNAMED SILTSTONE		
			PETRIFIED FOREST		
			POLEO SANDSTONE LENTIL		
			SALITRAL SHALE TONGUE		
			AGUA ZARCA		
PALEOZOIC	PERMIAN	SAN ANDRES			
		GLORIETA			
		YESO			
	PENNSYLVANIAN	ABO			
		MADERA			
SANDIA					
CAMBRIAN	MISSISSIPPIAN	ARROYO PENASCO			
	PRECAMBRIAN	PRECAMBRIAN			

PALEONTOLOGY

In addition to the above mineral resources, the sedimentary rocks of the Cabezon WSA contain a large fossil assemblage. This assemblage includes a substantial part of the Paleozoic and Mesozoic fossil record, although only fossils of Cretaceous age are found exposed at the surface (refer to Figure 1 for an outline of the geologic ages and corresponding strata). The environment of deposition of the Hosta Tongue of the Point Lookout Sandstone and the Satan Tongue of the Mancos Shale was such that the fossil record includes only those organisms adapted to a near-shore environment. This record includes marine invertebrates and occasional shark teeth. (Refer to Figure 1).

WATER

Surface Water

The WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande. It is considered part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral. Runoff occurs at many times throughout the year, but volume varies by season. Highest runoff commonly occurs during the summer thundershower season from July through September. Comparison of rainfall data with discharge data for this season shows that up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). The water yield from Cabezon Peak ranges from 1 to 3 inches annually.

The average annual precipitation in the WSA is between 25 and 30 centimeters (between 10 and 12 inches), probably less than 4 percent of which is recorded as runoff downstream. The remaining 96 percent seeps into alluvium or bedrock units, or is lost through evapotranspiration.

Surface waters in the WSA include four reservoirs that are utilized by livestock and wildlife.

Ground Water

The WSA lies within the state-declared Rio Grande Underground Water Basin. Ground water is not available at a reasonable depth except in shallow alluvium, and no ground water developments (wells and springs) are known to occur in the WSA.

The quality of ground water in the WSA ranges from fresh to moderately saline, but is commonly marginal for domestic uses. The present dominant water use in the WSA is by beef cattle and wildlife.

SOILS

A large portion of the Cabezon WSA has undergone undesirable to critical levels of soil loss. Many of the soils are either severely eroded, currently eroding at critical rates, or highly susceptible to sheet and gully erosion. These conditions exist on two soil mapping units, the Shingle Complex and Travesilla-Shingle-Rock Outcrop Complex.

VEGETATION

Table 3 summarizes by range sites the vegetation located in the Cabezon WSA, and Map 3 further identifies range site locations in the WSA.

Rare Plant Species

Cabezon Peak, a large volcanic plug, and the abutting basaltic flows that skirt it provide habitat for Mamillaria wrightii (pincushion cactus) and Pediocactus papyracanthus (blue grama cactus). One population of pincushion cactus has been located on the prominent shelf that breaks up the sheer relief of the slope of the peak. This species has also been found scattered on the lowlands of the Cabezon Peak in the grama grassland. Blue grama cactus has been found in one location. Both species are prized by collectors who usually decimate populations once they locate them (Knight 1981).

WILDLIFE

Eight habitat sites and two natural special habitat features have been identified in the Cabezon WSA. The habitat sites correspond to range sites described in the vegetation section above (refer to Table 3), and the special habitat features are the volcanic neck that forms Cabezon Peak and the associated bluffs. This habitat supports some 90 vertebrate species. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the BLM Albuquerque District Office.)

The wildlife in the WSA consists of varieties common to the southwest region of the United States. Mule deer, white-tailed antelope, and pronghorn antelope occur in the WSA, although none are abundant. The most common predator in the WSA is the coyote; rocky slopes and bluffs provide excellent habitat for bobcats and gray fox. Badgers have also been sighted in the WSA. Common small mammals include: cottontails, ground squirrels, deer mice, and white-throated woodrats.

The most commonly sighted birds are golden eagles, red-tailed hawks, sparrowhawks, horned larks, pinyon jays, ravens, western meadowlarks, and Oregon juncos. Scaled quail and mourning doves occur in small to medium numbers. Six species of waterfowl have reportedly used stockponds in the Ojo del Espiritu Santo Grant, which includes the WSA (USDI, BLM 1978). Two of these stockponds are located in the WSA.

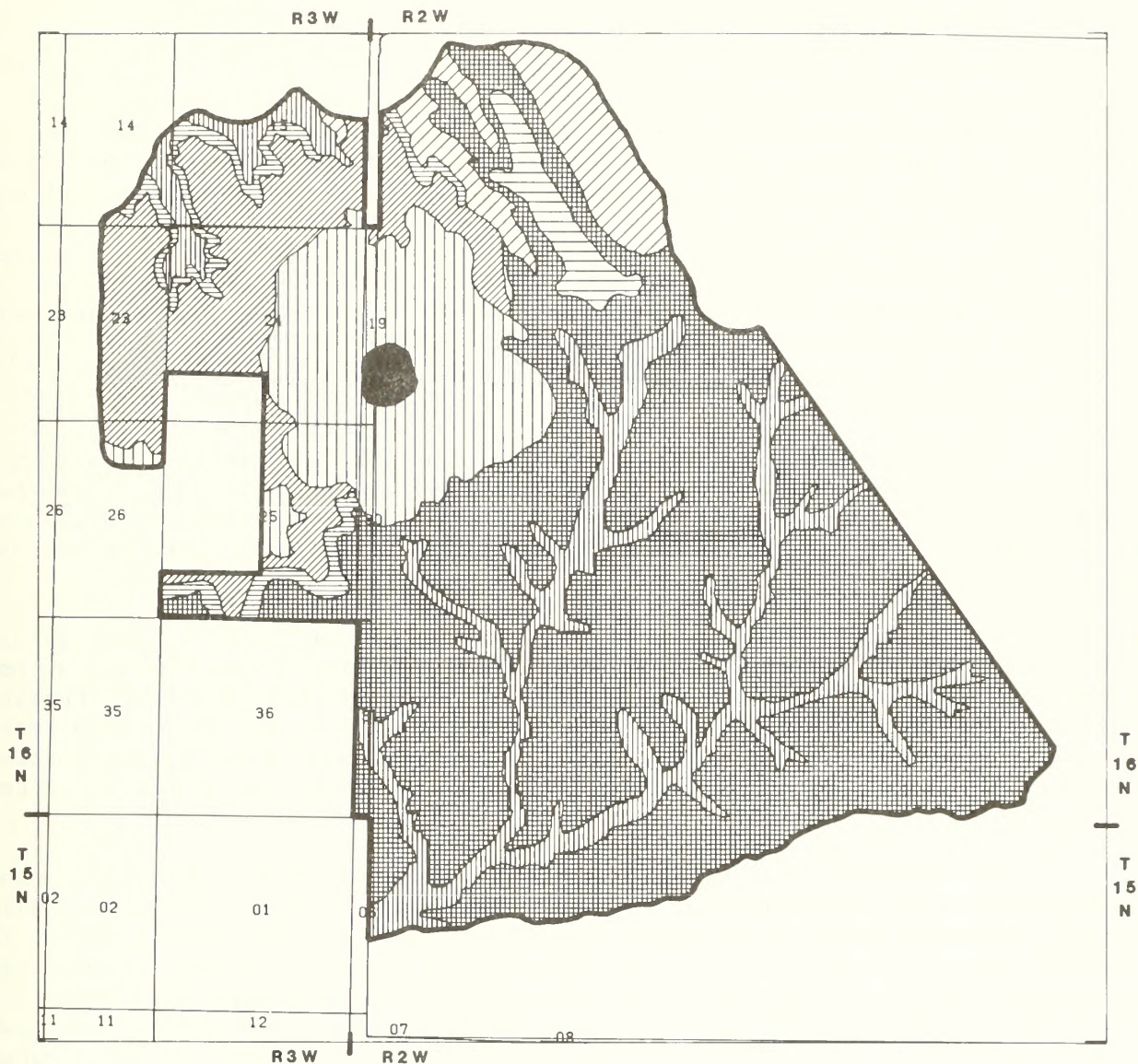
TABLE 3
VEGETATION, CABEZON WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grama-galleta steppe	6	S	24	5.5	Fair-poor	Blue grama, galleta grass, alkali sacaton, sand dropseed, bottlebrush squirreltail, needle and thread grass, winterfat, broom snake-weed, fourwing saltbush	45	2,500	Alkali sacaton, blue grama, galleta grass, sand dropseed, burro grass, fourwing saltbush, winterfat, broom snake-weed, yellow flowered prickly pear, walkingstick cholla	080-Billings Variant Silty Clay
2	Pinyon-juniper woodland	6	S	30	8.3	Fair	Blue grama, alkali sacaton, sand dropseed, sideoats grama, ring muhly, bottlebrush squirreltail, western wheat-grass, shad-scale, broom snakeweed, one-seed juniper, pinyon, Mormon tea, fringed sage, cliff-rose, walkingstick cholla, winterfat, rubber rabbit-brush, yellow flowered prickly pear	15	525	Sideoats grama, Indian rice-grass, black grama, NM feather-grass, needle and thread grass, red threeawn, blue grama, galleta grass, winterfat, Bigelow sage, alpine sulfurflower, Wright eriogonum, soaptree yucca, one-seed juniper	060-Shingle Complex
3	Pinyon-juniper woodland	33	N, S, E, W	36	11.2	Good	Blue grama, galleta grass, needle and thread grass, black grama, bottlebrush squirreltail, sideoats grama, alkali sacaton, sand dropseed, broom snake-weed, walkingstick cholla, winterfat, one-seed juniper, pinyon	20	450	Blue grama, black grama, NM feather-grass, bottlebrush squirreltail, galleta grass	100-basalt Outcrop-Orthent Ustolls Complex
4	Grama-galleta steppe	4	N	31	6.2	Fair	Alkali sacaton, galleta grass, blue grama, sand dropseed	20	450	Indian rice-grass, bottlebrush squirreltail, blue grama, galleta grass, sand dropseed, red three-awn, ring muhly, fourwing saltbush, winterfat, broom snake-weed	050-Penist-aja-Hagerman Assoc-iation

TABLE 3 (Concluded)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
5	Gramma-galleta steppe	4	N, S	46	5.3	Fair	Blue grama, galleta grass, ring muhly, alkali sacaton, sand dropseed, black grama, bottlebrush squirreltail, fourwing saltbush, broom snakeweed, rubber rabbitbrush	15	1,135	Alkali sacaton, blue grama, galleta grass, bottlebrush squirreltail, fourwing saltbush, winterfat, black greasewood, shadscale	090-Un-named Clay Loam
6	Gramma-galleta steppe	18	E, S, W,	18	11.2	Fair-poor	Galleta grass, blue grama, alkali sacaton, sand dropseed, bottlebrush squirreltail, ring muhly, Indian ricegrass, shadscale, rubber rabbitbrush, broom snakeweed, one-seed juniper, fourwing saltbush	15	60-80	Pinyon, juniper, Indian ricegrass, blue grama, bottlebrush squirreltail, dryland sedge, big sagebrush, true mountain mahogany, antelope bitterbrush, shrub live oak, Gambel oak, goldenweed, soapweed yucca, broom snakeweed, pinque	010-Rock Outcrop-Travesilla-Persayo Assoc.
7	Barren	-	-	less than 2	-	-	-	-	-	-	100-Barren Rock Face and Talus Slopes
8	Gramma-galleta steppe	60	S	8	56	Fair	Alkali sacaton, galleta grass, red threeawn, thurber muhly, shadscale, rubber rabbitbrush, one-seed juniper	15	60-80	Pinyon, juniper, Indian ricegrass, bottlebrush squirreltail, blue grama, dryland sage, big sagebrush, true mountain mahogany, antelope bitterbrush, shrub live oak, Gambel oak, goldenweed, soapweed yucca, broom snakeweed, pinque	010-Rim Rock-Rock Outcrop

MAP 3 VEGETATION, CABEZON WSA



R3W R2W
1.0 0 MILE 1.0

BUREAU OF LAND MANAGEMENT

RANGE SITE 1 - 1033 ACRES
RANGE SITE 2 - 4294 ACRES
RANGE SITE 3 - 1088 ACRES
RANGE SITE 4 - 145 ACRES
RANGE SITE 5 - 380 ACRES
RANGE SITE 6 - 979 ACRES
RANGE SITE 7 - 46 ACRES
RANGE SITE 8 - 213 ACRES
TYPE LINES
SECTIONS



Reptiles likely to be encountered in the area include the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

Threatened and Endangered Animals

No state or federally listed threatened or endangered animal species has been reported in the WSA; however, bald eagles are known to occasionally migrate through the Cabezon WSA.

VISUAL RESOURCES

Cabezon Peak has been given a high scenic quality rating of Class A, based on an assessment of seven key factors (landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification). The high vertical relief of this prominent peak, in contrast to the surrounding landscape, adds favorably to the WSA's visual quality. Further, the WSA lacks esthetically discordant influences or modifications. Because of the peak's high scenic quality rating, a Class II visual resource management recommendation has been made for it (USDI, BLM 1984).

CULTURAL RESOURCES

Cultural resource inventory within the Cabezon WSA is limited to a reconnaissance of approximately one section (640 acres). Two sites have been recorded. One of these, reported as a small sherd scatter, appears to consist of pieces from the same vessel and should properly be considered an isolated artifact.

The other cultural value recorded is a multiple component site located on top of Cabezon Peak itself. This site has great importance both prehistorically and historically, as reflected by its National Register status. One masonry-walled structure probably functioned as a prehistoric shrine. Apparent recent use of the structure and associated fireplace suggests the location retains its function as a shrine for Native Americans today.

The site and vicinity apparently represent a station in the complex, little-understood prehistoric Chacoan signaling system. This signaling system, probably associated with a prehistoric road system, ties together the central Chaco Canyon with over 80 known related "outlier" communities dispersed over 30,000 square miles. The great relative height of Cabezon Peak makes visible Chacra Mesa, Red Mountain, Mount Taylor, Hoste Butte, the peaks around Cerrillos, and several other known sites important in the Chacoan system.

The "Great Peak" not only has had direct use but has served as a landmark. It is located at the intersection of two trails, probably prehistoric in origin; it falls upon the Santa Fe to Fort Wingate stage coach and Star Line freight routes; and it is mentioned as a place in Pueblo and Navajo origin myths.

Cabazon Peak has also been a traditional boundary marker for the easternmost part of the Navajo Tribal world. It is featured as a reference in virtually all area explorations and is specifically mentioned in association with area Spanish land grants as early as 1767.

American occupation of the area around Cabazon Peak began during the war with Mexico in 1846. During the next 30 years, government troops and explorers crisscrossed the Cabazon Peak country.

A sizeable historic occupation has existed in this area, some evidence of which is located within the WSA. Using these known sites, recorded history, and evaluation of surrounding areas, it can be assumed that the Cabazon WSA contains substantial and dramatic evidences of occupation and use by humans for over 10,000 years.

AIR QUALITY

Ambient Air Quality monitoring data for the general area surrounding the Cabazon WSA was collected during 1975 and 1976 by the State of New Mexico Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II Standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

The Cabezon WSA is composed of both public domain lands and acquired lands that are part of the Ojo del Espiritu Santo Land Grant. Because the grant was acquired under the Bankhead-Jones Act, all of the locatable minerals have been reclassified as leasables, and exploitation of these minerals requires the issuance of a prospecting permit and lease. Those WSA lands situated outside of the grant boundaries are public domain lands and are underlain by BLM-administered minerals that are locatable under the 1882 mining laws.

No oil and gas leases or mining claims occur within the Cabezon WSA boundaries.

Table 4 is a list of those mineral commodities that are known or suspected to occur beneath the WSA. It indicates that the highest potential for development is associated with oil and gas contained within the Dakota Formation. The geologic environment, the inferred geologic processes, the reported mineral occurrences and known mines or deposits indicate a moderate favorability for oil and gas (refer to Map 4).

WATERSHED

The Cabezon WSA is part of the Rio Puerco Watershed, which has one of the most severe soil erosion conditions in the United States. This watershed is one of the major tributaries of the Rio Grande, embracing approximately one-third of the drainage that lies in New Mexico above Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth of the waters of the Rio Grande, yet it is the source of 56 percent of the sediment that obstructs the main Rio Grande channel (Waite 1972).

The major drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by overgrazing in the late 1800's and early 1900's. This past grazing use has resulted in extensive sheet, rill and gully erosion in all areas of the WSA except the slopes of Cabezon Peak. Gully erosion is a serious hazard along the drainages of livestock water locations because the vegetative cover has been depleted. Dry arroyos produce high sediment and waterflows after each torrential rainstorm. The main drainages are eroded to bedrock up to 10 feet deep, and side drainages are eroded by small rivulets of a few inches to 4 feet deep. The vegetation cover density of this part of the WSA cannot be increased substantially because the soil does not release water readily to plants (Clark 1975).

The slopes of Cabezon Peak have a slight erosion hazard, being covered by various-sized basalt stones that help retard erosion. The rolling

TABLE 4

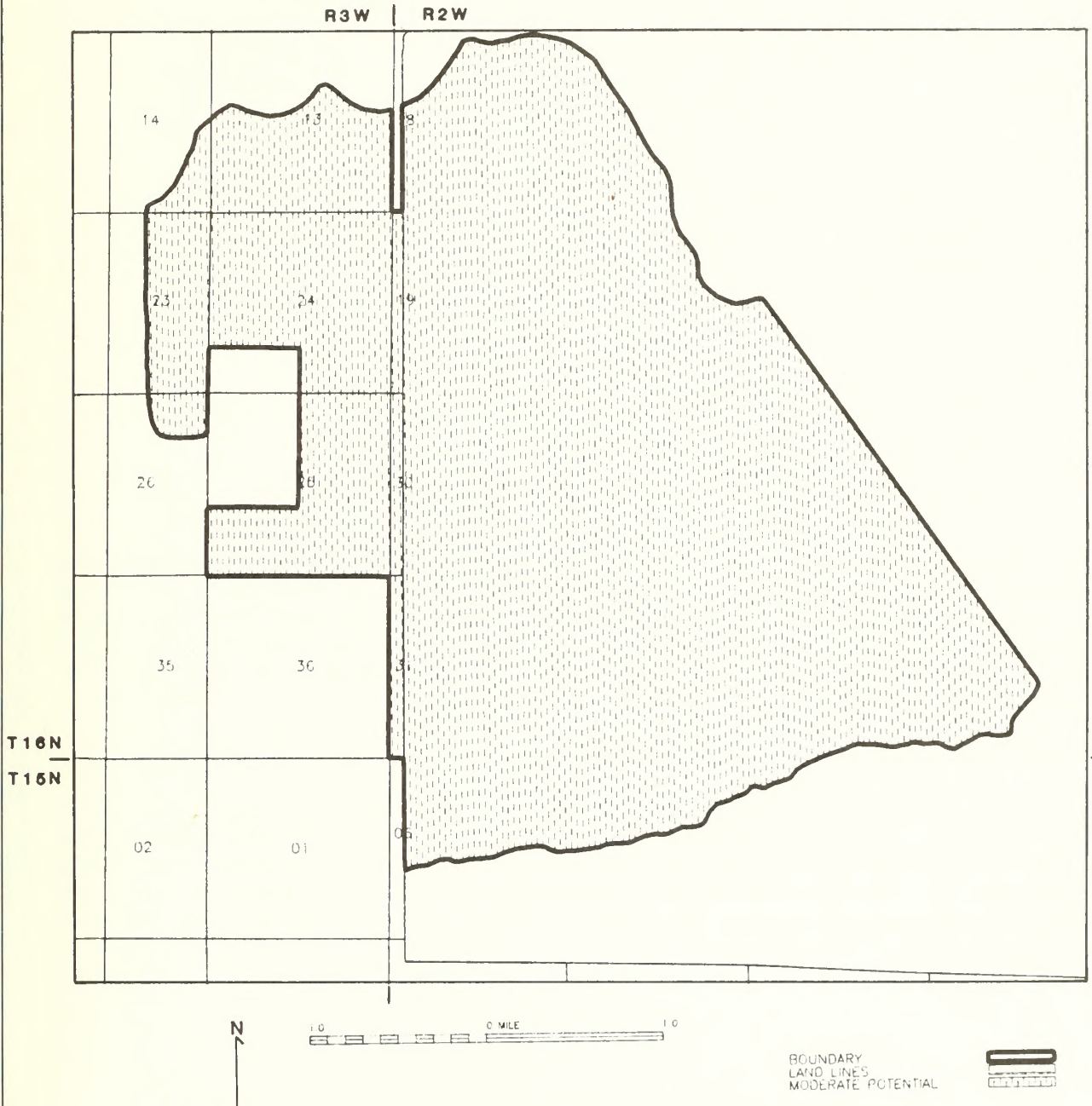
MINERAL POTENTIAL
CABEZON WSA

Commodity	Associated Environment	Mineral Potential	Acreage ^{a/}
Uranium	Morrison Formation (Jurassic); Primary and redistributed mineralization in arkosic sand- stones; mineralization generally restricted to channels within deltaic, braided-stream complex. Minor occurrences reported from the base of the Dakota Formation (Cretaceous).	Low	NC
Oil and Gas	Sedimentary rocks of Jurassic and Cretaceous age; generally stratigraphic traps in sand- stone associated with paleo- strand lines or buried aeolian dunes.	Moderate	8,118
Geothermal	Major faulting in proximity to Late-Tertiary aged volcanoes; portions of the WSA have been included in a Known Geothermal Resource Area (KGRA)	Low	NC

Source: New Mexico Bureau of Mines and Mineral Resources. 1984. Preliminary Report on the Geology and Mineral Resource Potential of the northern Rio Puerco Resource Area in Sandoval and Bernalillo Counties and adjacent parts of McKinley, Cibola and Santa Fe Counties, New Mexico. Open File Report 211.

Note: ^{a/}Acreages on areas of low potential were not calculated (NC).

MAP 4 **CABEZON WSA** POTENTIAL OIL AND GAS



foothills at the base of these slopes are broken by scattered pockets of moderately deep soil. The natural fertility of the soil is high; it is well-drained to aid in maintaining the good cover of native grasses, shrubs, and juniper and pinyon trees (Clark 1975).

The average rate of erosion for the WSA is moderate. The erosion occurring on the WSA is quantified in Table 5.

TABLE 5

EROSION

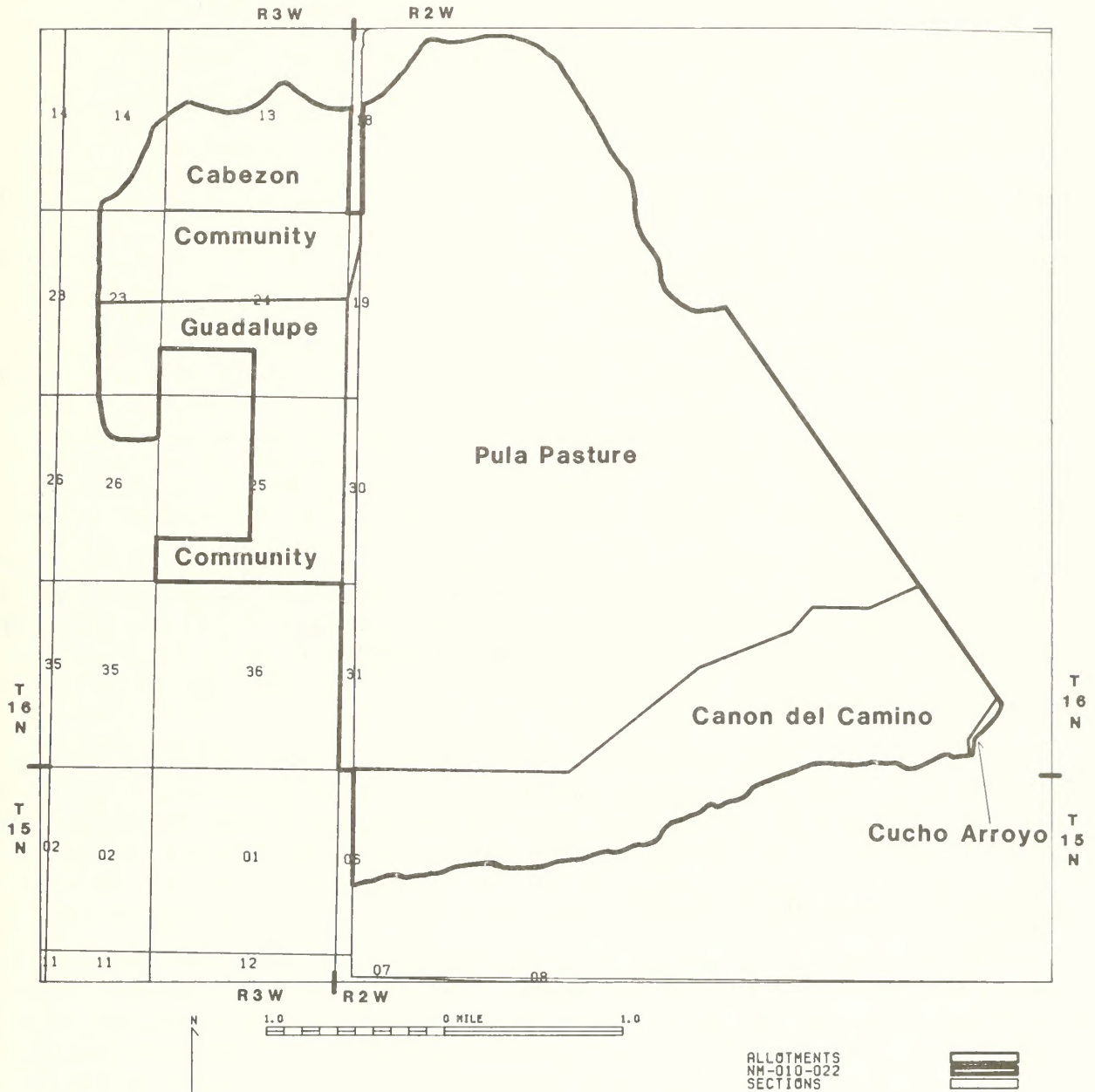
Type of Erosion	Percentage of Total Erosion	Ac-ft/mi ² /yr
Gully	25	2.1
Sheet	65	.7
Wind (abrasion)	10	.1

The erosion occurring on the WSA is an economic detriment because the useful life of a reservoir in this watershed is one-half that of a reservoir in a stabilized watershed. Additionally, most fences and roads require annual maintenance at drainage crossings due to damage from runoff flow, and livestock losses occur in the WSA because of the poor quality of surface water supplies (Clark 1975).

LIVESTOCK GRAZING

All 8,118 acres included in the Cabezon WSA are authorized for grazing on five allotments (refer to Map 5). None of the allotments lies entirely within the boundaries of the WSA. The grazing systems and range improvements on the allotments are discussed below, and Table 6 displays grazing information pertaining to them. A total of 1,207 Animal Unit Months (AUMs) are permitted on this WSA.

MAP 5
RANGE ALLOTMENTS, CABEZON WSA



BUREAU OF LAND MANAGEMENT

TABLE 6

RANGE ALLOTMENT INFORMATION

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Numbers	Season of Use
Pula Pasture	0074	7,177	4,932	6	115 head	Yearlong
Canyon del Camino	0053	4,936	1,466	1	69 head	Yearlong
Cabezon Community	0044	4,422	856	4	58 head	Yearlong
Guadalupe Community	0047	9,814	860	2	88 head	Yearlong
Cucho Arroyo	0057	4,917	4	2	110 head	6 months (12/1-5/31)

Pula Pasture Allotment (#0074)

No grazing management systems have been proposed for this allotment. Three dirt tanks and 7 miles of allotment boundary fence separate this allotment from three other allotments that have acreage within the WSA. These improvements are all within the boundaries of the WSA.

Canyon Del Camino Allotment (#0053)

Three pastures of the allotment are being used, but this use is not systematic because the eastern pasture contains no permanent water. This pasture has two dirt tanks that only impound water during favorable summer rainfall years. It also contains approximately 5 miles of fence.

Cabezon Community Allotment (#0044)

One stock tank and a total of 2.1 miles of allotment boundary fence exist within the WSA. The boundary fence divides the Cabezon Community Allotment from two adjoining allotments, the Pula Pasture and the Guadalupe Community.

Guadalupe Community Allotment (#0047)

Nothing is proposed currently in the 860 acre portion overlapping the WSA.

Cucho Arroyo Allotment (#0057)

Approximately 8 acres of this allotment lie within the Cabezon WSA.

FOREST PRODUCTS

No authorized wood collection areas have been set up within the Cabezon WSA, and several fuelwood trespasses have been recorded. Periodic pinyon nut collection is assumed to occur on a small scale.

RECREATION

Cabezon Peak has provided a popular climbing spot for many years. Several clubs and individuals utilize the peak annually, as shown by an informal register placed on top of the peak during the summer of 1980. This register has recorded approximately 400 persons to date. Climbers came from in- and out-of-state, as well as from two foreign countries. The climb is considered appropriate for both beginning and intermediate climbers, with an expansive view of the Rio Puerco Valley rewarding the effort.

Approximately 60 to 100 hunter days are spent annually in the WSA in pursuit of quail, doves, rabbits and coyotes. Trapping for coyote and bobcat varies with the price of pelts.

The most current recreation inventory (Recreation Opportunity Spectrum) classifies the majority of the WSA as semi-primitive non-motorized with small amounts of semi-primitive motorized (SPM) and road-natural (RN) opportunity.

Random off-road vehicle use occurs in the Cabezon WSA by both motorcycles and four-wheel drive vehicles. Much of the four-wheel drive activity is associated with hunting, camping or in an attempt to explore the foothills of Cabezon Peak.

EDUCATION/RESEARCH

Cabezon Peak itself provides interesting subject matter for geologic study. Research and educational values have historically been associated with Cabezon Peak and continue to be so. Prehistoric and historic shrines contained within the Cabezon WSA also provide a good basis for research and education, as does the habitat for two species of rare cactus.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used and continue to use the Cabezon WSA for hunting and other activities. The shrine atop Cabezon Peak has traditional value to the Jemez Pueblo, although its use today is less frequent than in the past. The Jemez Pueblo eagle-catching society requested a BLM permit to

engage in ceremonial activities in the fall of 1982 on and around Cabazon Peak. Use within this WSA by the Jemez Pueblo (and probably others) for the taking of eagles was heavy until about 40 years ago.

Recent surveys and interviews with officials of Jemez, Zia, and Santa Ana Pueblos and the Canyoncito Navajo Reservation generally show that many places of religious significance exist in and near Cabazon Peak, but that specific site locations are not known to the lay members of the tribes. Tribal elders know and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature.

REALTY ACTIONS

A powerline right-of-way (NM-559354) constitutes part of the Cabazon WSA's eastern boundary, and lies near a proposed 500-kV transmission line corridor that would service the proposed New Mexico Generating Station. However, present information provided by Public Service Company of New Mexico indicates that this transmission line could be accommodated entirely outside of the present boundaries of the WSA.

The area to the east of the Cabazon WSA and to the west of the Ojito WSA (refer to Map 2) has been described as an important public land "window" through which any future pipeline or powerline rights-of-way may pass.

WILDLIFE

Cabazon Peak and the bluffs southwest of it are particularly attractive to birds of prey and swallows for perching and nesting sites. These two volcanic formations are the major special habitat features identified in the WSA. Golden eagle nest sites have been recorded on Cabazon Peak.

Antelope use of the WSA is limited because these animals require more gentle terrain. The few antelope using the WSA normally utilize the eastern boundary. No open season for antelope has occurred in the WSA.

Because trees and shrubs are relatively scarce, the WSA is only marginal mule deer range. As the result of the low number of deer on the WSA, it is not highly attractive to deer hunters; estimated use is less than 20 hunter days annually. A report was received, however, of a trophy-class buck taken from the slope of Cabazon Peak in the 1981 season.

Habitat for quail and doves is marginal, and existing quail numbers are low (USDI, BLM 1977). The topographic features and climate of the WSA appear favorable for quail, and potential for improvement is high.

During the wetter months of the summer rainy season, water is normally available for wildlife use in the pools, reservoirs, and intermittent streams of the WSA. With the approach of the drier seasons, water becomes

scarce. This is particularly true during late spring and early summer, when succulent vegetation is also scarce.

Waterfowl and shorebird habitat exists on approximately 2 acres of temporary water located in livestock reservoirs and soil stabilization projects. While none of these provide year-round waters, they are frequently full during the fall migration and commonly contain water in the spring. Where these reservoirs are protected from overutilization by livestock, either by fencing or a rest-rotation management system, the annual drawdown due to evaporation allows for an invasion of shoreline vegetation, which provides food and cover for ducks and shorebirds.

The Cabazon WSA is within the boundaries of the Ojo del Espiritu Santo Grant and Upper Rio Puerco Habitat Management Plans (HMPs). The former has the most effect on wilderness management considerations. This HMP proposes maintenance of exclosure fences and stock ponds. These projects would benefit most species. Two exclosures associated with stock tanks are the only habitat improvements in the WSA.

Control of predators and rodents (primarily coyotes and prairie dogs) is sometimes requested by livestock operators when these animals affect livestock operations. No animal damage control requests have been received by the BLM for the Cabazon WSA in the past 2 years. In response to a questionnaire sent out in 1978, however, several of the allottees expressed interest in being included in animal damage control operations.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

The cumulative impact of man-made intrusions has been evaluated. Naturalness is a function of the size of the WSA, and the number and distribution of the impacts. Considering the overall effect of man-made intrusions upon the entire WSA, the BLM has found that the imprint of man within the Cabezon WSA is substantially unnoticeable.

The Cabezon WSA contains a fenceline network, constructed of a mixture of wooden and metal posts. Six vehicular ways (2 3/4 miles) are used primarily for access to range improvements. These improvements consist of five small retention dams visually buffered by rolling topography. Because of the unyielding nature of the peak itself, few man-made imprints have occurred, leaving the WSA in an exceptionally natural state.

Solitude

The unique geology of the Cabezon WSA provides an outstanding opportunity for solitude for those who choose to climb the peak itself or wander among the foothills. The peak provides an excellent internal topographic buffer, allowing utilization by several groups.

Opportunities for Primitive and Unconfined Recreation

The Cabezon WSA offers an opportunity for sightseeing and photography related to scenic, geologic and cultural values, as well as the occasion for climbing.

Special Features

Cabezon Peak, a volcanic plug, is similar in form to Devil's Tower, Wyoming, and related in origin to the volcanic neck at Shiprock, New Mexico. Although scores of volcanic necks are found throughout the high plateau country of Arizona, New Mexico, and Utah, Cabezon is, by its size and form, outstanding among them. (Refer to Figures 2 and 3).

Cabezon Peak provides an excellent scientific opportunity to study the internal plumbing of a volcano. The volcanic neck has provided geologists with many clues regarding the geologic event that culminated with the spread of the lava flows of the Cebolleta Mesa. Many of the volcanic centers that contributed lava to the flows are still buried beneath the basalt cap, but Cabezon Peak is one center now exposed for scientific study and inspection.



Figure 2 - The Cabezon WSA is dominated by flat grassy plains, pinyon-juniper-covered foothills, and a volcanic plug jutting more than 2,000 feet from the Rio Puerco Valley floor. "El Cabezon", as the peak is known, is historically, culturally, and geologically significant.



Figure 3 - Members of the New Mexico Mountain Club ascend El Cabezon annually. Scaling "the chimney" is one of the more difficult maneuvers of the non-technical trek.

Populations of two rare cactus species have been located in Cabazon WSA: Mamillaria wrightii (pincushion cactus) and Pediocactus papyracanthus (blue grama cactus).

Significant prehistoric and historic special features are associated with the cultural resources of Cabazon Peak and its immediate surroundings including a Chacoan signal/shrine site atop the peak.

Two special wildlife habitat features are formed by Cabazon Peak and the surrounding bluffs; these are among several geologic formations in the area valuable as habitat for non-game species, including birds of prey.

The visual resources and geology of Cabazon Peak highlight its significance as an important historic and contemporary visual landmark.

Multiple Resource Benefits

The Cabazon WSA contains many natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM.

Diversity in the National Wilderness Preservation System

Ecotypes Present

The Cabazon WSA, according to Robert G. Bailey (USDA, FS 1980), is classified under Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This area can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic ecotypes (Kuchler 1964).

Grama-Galleta Steppe. Covers approximately 2,461 acres (30 percent) of the WSA.

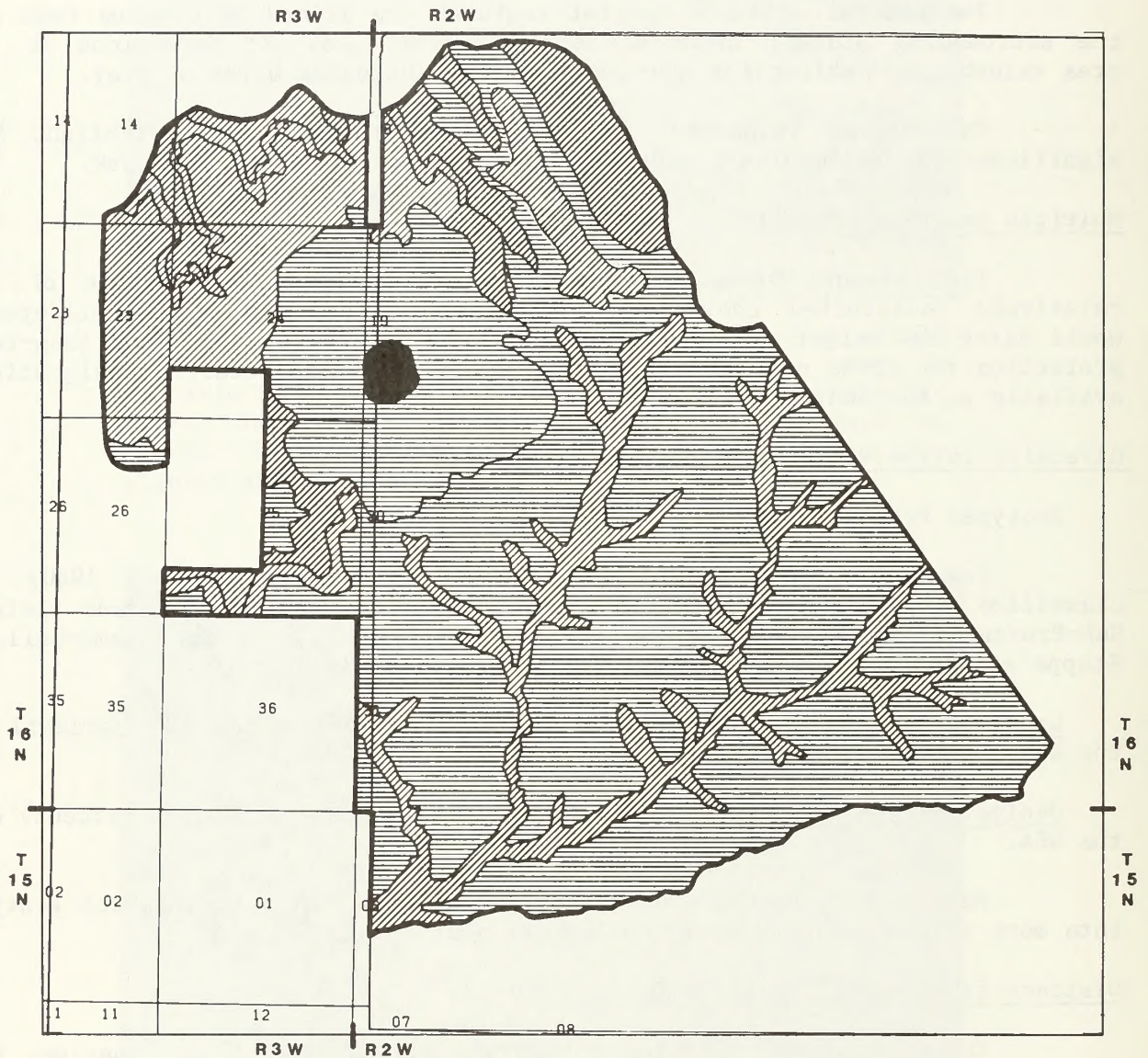
Juniper-Pinyon Woodland. Covers approximately 5,657 acres (70 percent) of the WSA.

Map 6 displays these ecotypes. Vegetation Map 3 breaks each ecotype into more refined site categories that are narrated in Table 3.

Distance from Major Population Centers

The Cabazon WSA is within 5 hours' driving time of Albuquerque, New Mexico, identified as part of a Standard Metropolitan Statistical Area (SMSA) in the 1980 census (USDC, BC 1981). The WSA is a 2 1/2-hour drive from Albuquerque or Santa Fe, New Mexico (refer to Map 2).

MAP 6 ECOTYPES, CABEZON WSA



BUREAU OF LAND MANAGEMENT

GRAMA-GALLETA STEPPE
JUNIPER-PINYON WOODLAND
BARREN
TYPE LINES
SECTIONS
NM-010-022



MANAGEABILITY

Cabezon WSA can be effectively managed for wilderness because of its rugged nature, lack of private inholdings, and lack of encumbrance by valid existing rights. No oil and gas leases or mining claims exist.

The Cabezon WSA contains no private or state inholdings. However, the State of New Mexico holds 1,280 acres contiguous to the western boundary of the WSA (refer to Map 1). Acquisition of this acreage by purchase or exchange would enhance the overall land pattern and improve the manageability of the WSA. The maintained dirt road would become the boundary, rather than property boundaries which are presently difficult to discern on the ground. The State of New Mexico has indicated interest in an exchange of these lands.

A slender 20-acre parcel of private land protrudes into the northern boundary of the Cabezon WSA (refer to Map 1). Acquisition of this parcel would simplify the overall management of the Cabezon WSA.

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

This report has been prepared using public input obtained by widespread mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Considerable interest in the the management status of the Cabezon WSA has been expressed by the public. The WSA's close proximity to the cities of Albuquerque and Santa Fe and its resultant ease of access for such a large percentage of New Mexico's population has been pointed out. The Cabezon WSA's wide variety of supplemental values, natural characteristics, and opportunities for solitude and primitive and unconfined recreation have also been noted.

Opponents of wilderness designation for the Cabezon WSA have discussed the effect of excluding the WSA from possible future mineral exploration and development, the presence of human impacts, and possible limitations on ranch operations.

During the public comment period on the Albuquerque District Wilderness Draft Environment Assesment (USDI, BLM 1983), 34 public inputs were received on the Cabezon WSA. Five inputs expressed opposition to wilderness designation. Several comments cited conflicts with development of uranium, copper, gold, oil and gas. It was also suggested that the Cabezon WSA's special values, including the recreation opportunities, could be better managed without wilderness designation.

Twenty-nine inputs favored wilderness designation. In addition to the Cabezon WSA's outstanding wilderness characteristics of solitude and primitive recreation, it is a favorite hiking area. The peak also represents a "good deal of history", being a significant landmark. One input stated preserving the Cabezon WSA as a wilderness area would ensure the survival of representative scenery of the Rio Puerco Basin.

Additional comments expressed surprise that such a "renowned landmark" was not already designated. Others suggested aquisition of the 20-acre sliver of private land protruding into the north border of Cabezon WSA. Others commentors felt the document did not express the full oil and gas potential of the area, but submitted no further information to change the initial assessment. Several inputs felt the erosion problem could be corrected without major, intensive action, and therefore no acreage should be dropped from the Cabezon WSA's initial boundary.

SUMMARY OF SCOPING

Table 7 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in the table, issues related to forest products, air quality, recreation, watershed, vegetation, visual resources, cultural resources, wildlife, Native American uses, education/research were also considered in the District Final EA's and because little or no environmental impacts were identified, issues relating to those resources are not analyzed in this WAR.

TABLE 7

CABEZON
SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
Expand the WSA	This was not considered further because it would require consideration of lands not nominated for wilderness study and lands not protected by the Interim Management Policy. However, expansion by aquisition of contiguous state holdings has been examined in order to enhance overall wilderness management .
Amended Boundary Alternative (drop 1,429 acres from wilderness consideration because of conflicts with erosion control practices).	Additional data collection and analysis was done in 1984 in response to public comments. This analysis indicates that correction of erosion occurring in the south portion of Cabezon WSA is not technically or financially feasible now or in the foreseeable future. Therefore, it is not practical to drop the acreage from wilderness consideration in order to allow erosion control methods to occur. This alternative was evaluated in the District E.A.
Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Uranium	Additional data developed since the Final E.A. indicates little conflict with mineral resources except for oil and gas exploration.
Geothermal Resources	Although Cabezon lies within a KGRA, it is located on the far edge of the field and potential for geothermal resources is marginal.
Livestock Grazing	No significant impact was identified to livestock grazing, however, this issue will be discussed because of Statewide interest.
Soil Erosion	Additional data collection and analysis was done in response to public comments. This analysis indicates that correction of erosion in the south portion of Cabezon WSA is not technically or financially feasible, now or in the foreseeable future. Therefore, correction of this condition ceases to be considered an issue.

TABLE 7 (Concluded)

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy.
Amended Boundary (Remove 134 acres to provide room for future rights-of-way)	This is the Proposed Action.

Issues Selected for Detailed Analysis

Four issues of concern were identified for the Cabezon WSA. These include oil and gas mineral potential, recreation off-road vehicle use, right-of-way and wilderness values.

The Cabezon WSA contains moderate potential for oil and gas exploration throughout the WSA. Concerns regarding mineral potential include restrictions to mineral exploration under wilderness designation, as well as the potential impacts to the naturalness of the Cabezon WSA resulting from mineral exploration if it is not designated wilderness.

Concerns were raised regarding the elimination of recreation off-road vehicle use under wilderness designation as well as the potential impacts to the naturalness of the Cabezon WSA resulting for increased recreation off-road vehicle use.

Concerns were raised regarding the potential to limit future powerline and pipeline rights-of-way by designating the Cabezon WSA as wilderness.

The wilderness values issue is required by the BLM Wilderness Study Policy. Cabezon is an important historical geographic landmark, and is very popular for climbing opportunities in a natural setting. It also includes a variety of special features including a National Register site, a Native American shrine, 2 rare cactus species, and wildlife habitat supporting golden eagles, red-tailed hawks, sparrow hawks, bobcat, gray fox, mule deer and antelope.

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the Cabezon WSA: All Wilderness, Amended Boundary, and No Wilderness (management under the existing plan).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 8,118 acres of public land within the Cabezon WSA would be recommended as suitable for wilderness designation. On any acreage designated as wilderness the existing and potential uses would be regulated in accordance with the BLM's Wilderness Management Policy (1981).

Impacts to Wilderness Values

High quality wilderness values would be retained and protected over the long term by management under this policy. The Cabezon WSA's existing natural character and the opportunities for solitude and primitive and unconfined recreation would be maintained, as well as its abundant special values.

Climbing Cabezon Peak is a very popular activity within the WSA. Special values include, high scenic values (scenic quality A), a National Register cultural site, two rare cactus species, a Native American shrine, opportunities for geologic study, and wildlife habitat supporting 3 raptor species, 6 waterfowl species, scaled quail, mourning dove, bobcat, gray fox, mule deer, antelope, 4 reptile species, as well as a wide variety of other non-game species.

Restricting surface disturbing and mechanized activities associated with ORV use and mineral exploration, would prevent increased access and provide long-term protection for a wide variety of existing natural resources. Restricting road building also prevents the cultural modifications to naturalness which inevitably accompany increased access. These modifications include trash dumping, removal of natural vegetation, the creation of temporary camp sites, wood cutting and poaching.

Those resources which would be maintained by restricting these activities include: 1. fragile soils susceptible to erosion and existing vegetation, including two rare cactus species; 2. scaled quail, mourning dove and non-game species nest sites; 3. current wildlife habitat for both non-game and game species; 4. current high visual resources 5. currently undisturbed cultural resources; and 6. current "natural laboratory" setting.

Wilderness designation would also maintain through long-term protection, the natural setting upon which Native American uses are often based.

Under the All Wilderness Alternative, the long-term protection of Congressional designation would significantly benefit the wilderness resources in the Cabezon WSA.

Impacts to Oil and Gas Exploration

Cabezon exhibits moderate favorability for oil and gas. The total lack of mining claims, and oil and gas leases appears to indicate low current interest in development of the resources. However, because of the assessment of moderate favorability for oil and gas it is reasonable to assume that mineral exploration would be pursued in the foreseeable future. Designating the Cabezon WSA as wilderness would withdraw it from appropriation under the mining laws and from leasing under the mineral leasing laws. As economic conditions change, the development of the Cabezon WSA's oil and gas resources may become attractive. The inability to gain access could impact oil and gas exploration, in the long term.

Impacts to Recreational Off-Road Vehicle (ORV) Use

ORV use includes 2-wheel, 3-wheel, and 4-wheel vehicles. Under the All Wilderness Alternative no vehicular access would be allowed on 2 3/4 miles of vehicular ways. None of these vehicles would be allowed within a designated wilderness area unless by permit based on the guidelines stated in the BLM Wilderness Management Policy. This would preclude back-country riding and exploring, vehicle camping and those who rely heavily on vehicular access in order to hunt.

Impacts to Livestock Grazing

Grazing would continue at the approximate levels existing at the time the area enters the wilderness system. Livestock operations on the Cabezon WSA could be affected by wilderness designation because of limitations imposed on the maintenance of existing range improvements. Although grazing is a permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, or location of improvements may occur in order to protect wilderness characteristics. Casual use of vehicles for inspection or repair of existing facilities would be precluded.

Impacts to Right-of-Ways

The narrow "window" of public land sandwiched between the eastern boundary of the Cabezon WSA and the western boundary of the Ojito WSA (refer to Map 2) may not be large enough to accommodate future pipeline rights-of-way if both WSAs become designated wilderness. If this is the case, the designation of the Cabezon WSA would result in future powerlines and pipelines being rerouted. Such rerouting would raise the applicants', and thus, the consumers', - costs.

AMENDED BOUNDARY ALTERNATIVE (Proposed Action)

Under this alternative 7,984 acres of public land within the Cabezon WSA would be recommended for wilderness designation (refer to Map 1). This alternative eliminates conflicts between wilderness and future rights-of-way actions. The amended boundary would exclude 134 acres along the eastern boundary of the WSA. If the area within the amended boundary is designated wilderness, all existing and potential uses would be managed under the BLM's Wilderness Management Policy (1981).

Impacts to Wilderness Values

Impacts to wilderness values would remain essentially the same as stated in the All Wilderness Alternative. Naturalness would be affected on the 134 acres deleted. However, wilderness resources are marginal in this region, and overall impacts to the Cabezon WSA would be negligible.

Impacts to Realty Actions

Retracting a portion of the eastern boundary of Cabezon 1/8 mile to the west would allow additional space for future pipeline rights-of-way (refer to Map 1). This impact, the extent of which cannot be quantified, would lessen the need for rerouting pipelines and powerlines, thus keeping construction costs lower.

Impacts to Oil and Gas Exploration

Impacts to oil and gas would remain the same as the All Wilderness Alternative except for the 134 acres deleted, where exploration could continue.

Impacts to Livestock Grazing

Impacts to livestock grazing would be the same as those stated in the All Wilderness Alternative.

Impacts to Recreation Off-Road Vehicle (ORV) Use

Impacts to recreation off-road vehicle (ORV) use would remain essentially the same as the All Wilderness Alternative. However, ORV use would continue on the 134 acres excluded.

NO WILDERNESS ALTERNATIVE

In the Albuquerque District Wilderness Draft Environmental Assessment, the Wilderness Analysis Report for this WSA (Appendix A) included three alternatives: All Wilderness, Amended Boundary, and No Action. Since the Draft's publication in March 1983, a comprehensive land use planning effort was initiated in the Rio Puerco Resource Area. This effort is called a Resource Management Plan (RMP). Alternatives in the Draft Rio Puerco Resource

Management Plan (USDI, BLM 1985) include special designation for all or part of this WSA. As a result, the No Action Alternative for this WSA was changed to the No Wilderness Alternative.

Until Congress makes its decision on wilderness designation, the WSA will be managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1979, amended 1983). If Congress designates it as wilderness, the WSA will be managed under the Wilderness Management Policy (USDI, BLM 1981).

If the WSA is not designated as wilderness, it will be managed under the No Wilderness Alternative, which would involve management under other than wilderness policy. Management would follow the guidelines of the approved Rio Puerco RMP.

The RMP is expected to be approved in late 1985 while the wilderness study process is still underway. Therefore, the RMP decision concerning this WSA may be incorporated into the Wilderness Study Report to be written later in this process. The Draft Rio Puerco RMP proposal for the Cabezon WSA emphasizes management of the scientific, educational, and interpretive potential of the following values: rare plant species, cultural resources, geology, visual resources, and semi-primitive non-motorized recreation experience. If the approved RMP does not include special designation for any portion of the Cabezon WSA, the WSA would be managed under the No Wilderness Alternative according to multiple use concepts without stressing the values listed above. The most probable uses of the area would be livestock grazing, mineral exploration, and ORV use.

Mineral exploration would most likely include upgrading of existing vehicular ways, the creation of additional access routes, drilling operations and possibly seismic blasting. ORV activity, both authorized and unauthorized can reasonably be expected to increase. Recreational ORV use could be expected to increase significantly because of the Cabezon WSA's close proximity to Albuquerque and Santa Fe, and the population expansions anticipated for these metropolitan areas. Increased ORV use has been noted the past several years, and is a trend expected to continue. Exploration of Cabezon Peak itself is often the motivation for increased vehicular activity. Upgrading of existing vehicular ways and the creation of additional access routes would likely occur in association with livestock grazing.

Impacts to Wilderness Values

Anticipated mineral exploration, increased ORV activity, and greater use of motorized vehicles would result in disruption of wildlife habitat, the deterioration of visual values, cultural resources and vegetation and soils, as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to significantly impact naturalness.

The WSA's soils and vegetation are very susceptible to erosion and thus very sensitive to increased motorized activity. They are generally unsuitable for successful application of rehabilitative management practices

such as range reseeding or earthen pond construction. This would have a primary impact on the Cabezon WSA's spectrum of habitat supporting two species of rare cactus, as well as a wide variety of wildlife species including red-tailed hawks, golden eagles, sparrow hawks, bobcat, gray fox, mule deer, antelope, and 6 species of migrating waterfowl. Existing wildlife populations would diminish.

Increased access and thus increased activity and noise levels would disrupt the nesting season for scaled quail, mourning dove, and non-game bird species which utilize grasses and shrubs along the Cabezon WSA's arroyos as well as rolling foothills. Nesting seasons extend from February to August, depending on the species, and the birds are particularly susceptible to increased activity during this time. Increased activity and habitat damage could be expected to impact all game and non-game species and diminish the existing wildlife populations. Overall, the impacts to wildlife could be significant because of ecosystem modifications, and the increased activity that will likely occur.

Under this alternative, direct impacts to cultural resources from ORV use, although slight, would increase through time as user demand grows. Indirect impacts (the effects not directly caused by vehicles themselves) contribute substantially to loss of cultural resources by providing relative ease of discovery, access, tool and equipment transport, artifact and specimen transport, and speed of action. These indirect impacts would increase dramatically under the No Wilderness Alternative.

Primitive and unconfined recreation relies on the resource base of a predominantly natural environment, which would not exist under this alternative. The Cabezon WSA is one area close to Albuquerque and Santa Fe that provides a particularly unique climbing experience. This extremely popular primitive recreation opportunity could be significantly impacted under the No Wilderness Alternative. The undisturbed natural setting in which the climb takes place is of primary importance. This has been restated over and over in the visitor register placed on top of the peak itself.

The natural setting supporting the special features, including cultural sites, high scenic quality A, two rare cactus species, and a variety of wildlife species, would be subject to increased surface disturbance and vehicular travel. Management under the No Wilderness Alternative would significantly degrade the Cabezon WSA's potential for use as a "natural laboratory", by degrading the quality of the natural phenomenon so accessible to the populations of Albuquerque and Santa Fe. Cabezon Peak is often the subject of study by geology students.

The natural settings on which Native American uses are often dependent would be subject to increased surface-disturbing activities. The impacts to Native American uses of this WSA as unquantifiable because of lack of access to proprietary information held by the various pueblos. However, evidence does exist that the Cabezon WSA is currently being used for Native American religious practices.

Not curtailing additional access and ORV activity would ultimately reduce the high visual quality of the Cabazon WSA. ORV activity, both authorized and unauthorized is expected to accelerate. Since additional roads predispose increased surface disturbance and increased cultural modification of the visual resources, a largely expanded road network (particularly that caused by unauthorized use) tends to shift visual resources from high scenic quality A and B, to a lower scenic quality C and D.

To date no protective designation has been made for the Cabazon WSA. The cumulative effect of this lack of protective designation and non-wilderness management practices would be to degrade or eliminate the Cabazon WSA's wilderness characteristics. Under this alternative, the impacts to wilderness values could be significant over the long term because protective management of the WSA would not be ensured though Congressional designation.

If Cabazon were to be designated in the RMP as a Special Management Area, it could still be subject to mineral exploration. In addition, the RMP designation is administrative in nature and is subject to continual review, updating and amending. It would not provide the long-term assurance of maintaining the Cabazon WSA's wilderness characteristics that Congressional designation would.

APPENDIX 5

EMPEDRADO WSA (NM-010-063)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The Empedrado Wilderness Study Area (WSA; NM-010-063) contains approximately 9,410 acres of public land, and is located about 4 miles northwest of the village of Guadalupe, New Mexico. It is bounded on the north, east and south by maintained roads, and on the west by a combination of maintained roads and property boundaries (refer to Maps 1 and 2).

The U.S. Geological Survey topographic maps that cover this WSA are Canada Calladita, Cerro Parido, Guadalupe, and Arroyo Empedrado (7.5 minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Empedrado WSA lies near the center of northwest New Mexico. Physiographically, the WSA is contained in the Navajo Section of the Colorado Plateau. The Navajo Section is characterized by outcrops of sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Regional landforms include mesas, cuestras, rock terraces, retreating escarpments, canyons, and arroyos.

A little over 500 feet of relief exists in the Empedrado WSA, from a low elevation of close to 6,000 feet in Torreon Wash to 6,552 feet on a mesa top. Major drainages include Arroyo Piedra Lumbre, Arroyo Empedrado, Torreon Wash, and Arroyo Chico. The overall geomorphology consists of sandstone hills cut by arroyos.

The Empedrado WSA has a semiarid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic. The average snowfall is more than 37 inches occurring between October and May. Summer precipitation comes as violent thunderstorms of high intensity, short duration, and extremely unpredictable rainfall patterns, with certain localized areas receiving moisture while adjacent ones receive none. The average annual precipitation is approximately 11 inches, about 40 percent of which falls in July and August.

The temperature, like the precipitation, is extremely variable from season to season. Extreme temperatures range from 102° F in the summer to -20° F in the winter. Average daily temperatures in the warm months vary from 45° F in April to 70° F in July.

The average growing season is approximately 160 days, beginning in May and ending in October. This 160-day season is seldom realized because available moisture, rather than the temperature, is the limiting factor.

MAP 1 EMPEDRADO (NM-010-063)

Legend

- WSA BOUNDARY
- (PROPOSED ACTION : NO WILDERNESS)
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

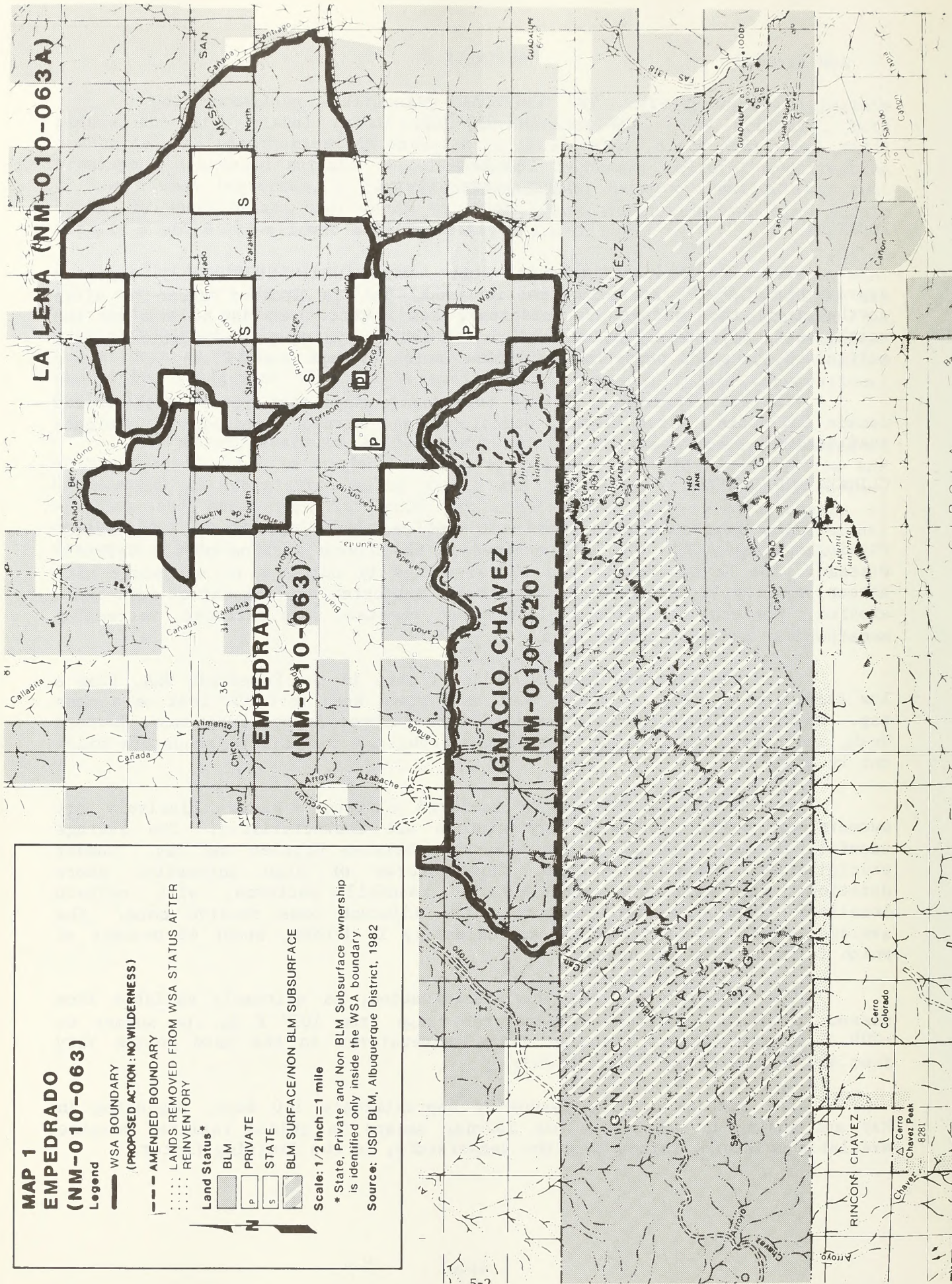
Land Status*

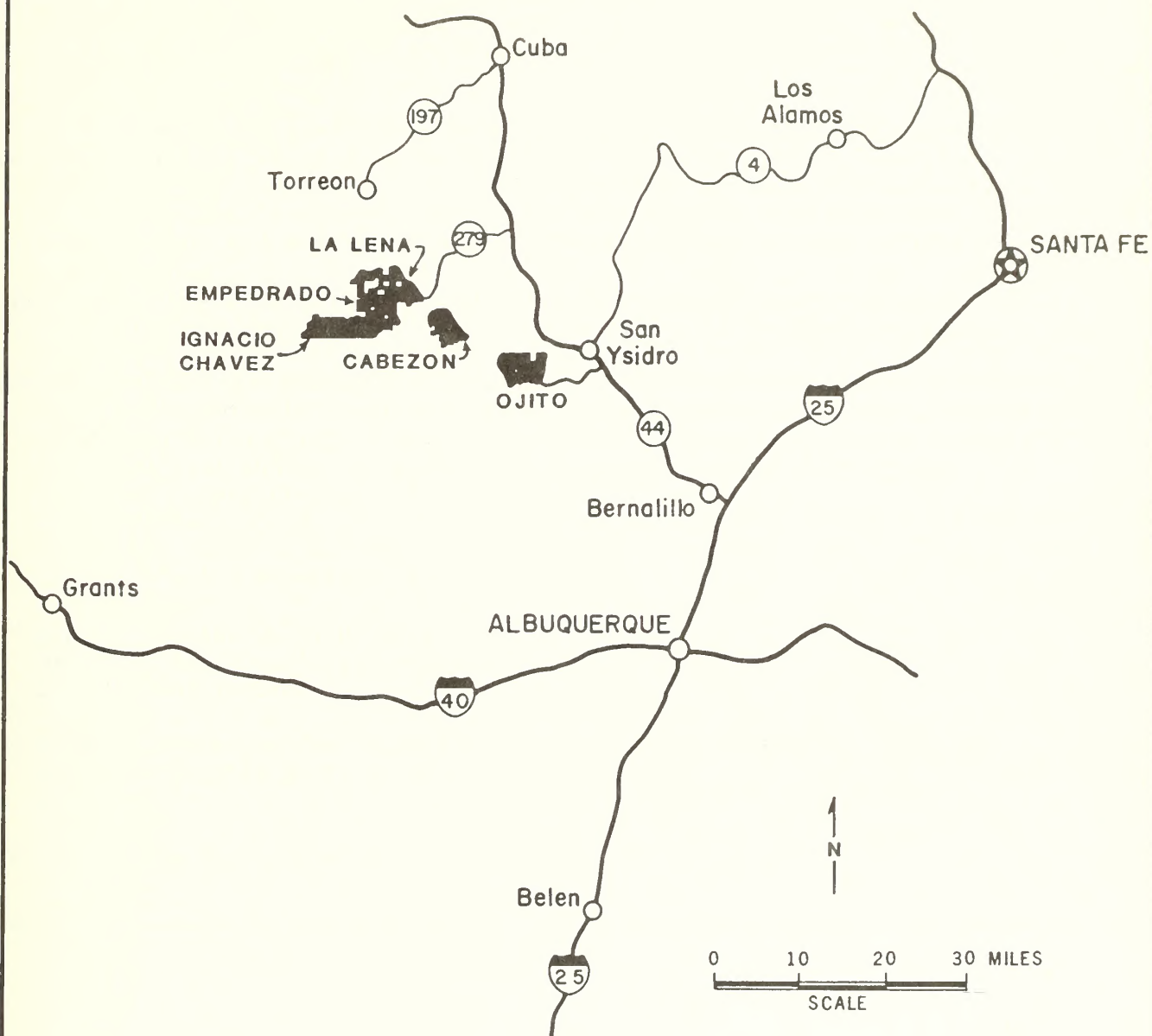
- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary

Source: USDI BLM, Albuquerque District, 1982





LEGEND
WILDERNESS STUDY AREAS

MAP 2
GENERAL LOCATION

LAND STATUS

The Empedrado WSA is made up of 9,410 acres of public land. A total of 260 acres of private inholdings are located inside this WSA (refer to Map 1).

ACCESS

Access is available from the west off State Highway 44 and a state-maintained gravel road. County-maintained dirt roads flank the eastern and western boundaries of the Empedrado WSA.

PROPOSED ACTION, ALTERNATIVES AND ISSUES

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

The significant environmental impacts by alternative for each of the environmental issues are summarized in Table 2.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Wilderness (Proposed Action)
<ul style="list-style-type: none"> o Manage 9,410 acres as wilderness. - Exploration and development of 3 pre-FLPMA oil and gas leases would be allowed. - 388 acres of moderate potential oil and gas, 9,022 acres of high potential oil and gas, 873 acres of moderate potential coal and humate and 1,994 acres of high potential coal and humate would be closed to exploration and development. - Close 1.5 miles of vehicle ways. - Require permits for vehicle access to 9 dirt tanks, and replacement of allotment fences. - Casual vehicle use for inspections and minor repairs would be precluded. - Current grazing levels would continue. 	<ul style="list-style-type: none"> o Manage 9,410 areas without wilderness protection. - Vehicle use would be allowed to continue. - 388 acres of moderate potential oil and gas, 9,022 acres of high potential oil and gas, 873 acres of moderate potential coal and humates and 1,994 acres of high potential coal and humates would be open for exploration and development. - Current grazing levels would continue.

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Major Environmental Issues		
	Wilderness Values	Mineral Exploration	Recreation Off- Road (ORV) Use
<u>Empedrado</u> All Wilderness (9,410 acres)	<ul style="list-style-type: none"> -Maintain Empedrado's natural character. -Maintain opportunities for solitude. -Protect soils vulnerable to erosion and vegetation throughout the WSA. -Maintain current high scenic quality in south portion of WSA. -Maintain current undisturbed condition of abundant cultural sites. -Maintain current wildlife habitat supporting golden eagles, red-tailed hawks, great horned owls, mule deer and gray fox. 	<ul style="list-style-type: none"> -Eliminate mineral exploration and development of moderate and high potential for oil and gas; coal and humates. -Allow development of 4 pre-FLPMA oil and gas leases. 	<ul style="list-style-type: none"> -1.5 miles of vehicle ways would be closed to recreation uses, including two-wheel, three-wheel, and four-wheel vehicles. This will impact back country exploration, vehicular camping and some hunting.
No Wilderness (9,410 acres) (Proposed Action)	<ul style="list-style-type: none"> -Reduce Empedrado's natural character. -Reduce opportunities for solitude. -Threaten fragile soils and vegetation. -Degrade high scenic quality in south portion of WSA. -Disturb nesting sites for raptors and other species; possibly to the point of nest abandonment. -Destroy habitat for golden eagles, red-tailed hawks, great horned owls, mule deer and gray fox, diminishing existing populations. -Degradation of abundant cultural resources. 	No Impact.	No Impact

SECTION 2

EXISTING RESOURCES

GEOLOGY

The Empedrado WSA lies in an area of relatively simple structure. Few faults and only gentle folding occur in association with the termination of the McCartys syncline. Regional dip is at a low angle to the northwest towards the San Juan Basin. The Empedrado WSA is situated on the southwestern margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dip, volcanic and sedimentary rocks crop out in many small cliffs and spectacular escarpments. (Refer to Figure 1).

ENERGY AND MINERALS

The appearance of much of the Empedrado WSA is the result of gently dipping sandstone beds of the Menefee Formation, which form a cuesta-and-valley landscape. The outcropping Menefee rocks represent the uppermost layers of a sedimentary sequence that ranges in age from Pennsylvanian to Cretaceous. Regionally, this sequence is known to contain deposits of oil and gas, coal, humates, and uranium.

PALEONTOLOGY

The sedimentary rocks that crop out in the WSA are known regionally to contain a varied fossil assemblage. Of the three exposed rock units, the massive Point Lookout Sandstone contains only trace fossils and plant fragments. The remaining exposed units, the Menefee Formation and Mancos Shale, contain a wide range of fossiliferous material. Occurring in the Menefee are plant fragments and vertebrate material, while the Mancos exhibits a fauna dominated by molluscs.

WATER

Surface Water

The Empedrado WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande. Arroyos in the WSA are seasonal and commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout a given year, but volumes vary enormously depending on season. Peaks commonly occur during the summer and early autumn months, which coincide with the rainy season. Up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). Yields vary considerably from one year to the next.

FIGURE 1
STRATIGRAPHIC SECTION,
CABEZON, EMPEDRADO, IGNACIO CHAVEZ,
LA LENA, AND OJITO WILDERNESS STUDY AREAS

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER	LITHOLOGY
CENOZOIC	QUATERNARY		PEDIMENT	
	TERTIARY		SANTA FE	
	CRETACEOUS	MESAVERDE	PICTURED CLIFFS	
			LEWIS	
			CLIFF HOUSE	
			MENEFEE	
			POINT LOOKOUT	
			CREVASSE CANYON	
			GALLUP	
			MANCOS	
			DAKOTA	
			BRUSHY BASIN	
	JURASSIC	MORRISON FORMATION	WESTWATER CANYON	
			RECAPTURE	
			BLUFF	
		SAN RAFAEL	SUMMERVILLE	
			TODILTO	
MESOZOIC	TRIASSIC	CHINLE FORMATION	ENTRADA	
			UNNAMED SILTSTONE	
			PETRIFIED FOREST	
			POLEO SANDSTONE LENTIL	
			SALITRAL SHALE TONGUE	
	PERMIAN	MAGDA-LENA	AGUA ZARCA	
			SAN ANDRES	
			GLORIETA	
			YESO	
			ABO	
PALEOZOIC	PENNSYLVANIAN	MAGDA-LENA	MADERA	
	MISSISSIPPIAN		SANDIA	
	PRECAMBRIAN		ARROYO PENASCO	
CAM-BRIAN	PRECAMBRIAN		PRECAMBRIAN	

Before 1979, Arroyo Chico was an intermittent stream about 4 miles long. The source of intermittent flow was a combination of discharge from a spring located in a channel bottom in Section 36, T. 17 N., R. 5 W., and input from various other springs in smaller tributary arroyos.

In 1979, a deep underground uranium mine near San Mateo began a dewatering process for its operation. Since then, water has been discharged into Arroyo Chico at a constant rate of about 5 to 6 cubic feet per second (2,500 to 3,000 gallons per minute). This water flows from the mine discharge point (which is about 35 stream miles upstream from the gage), past the gaging station and into the Rio Puerco for an undetermined distance downstream (Craig 1980). As a result, flow conditions in the main channel of Arroyo Chico have changed drastically, and it is now a perennial stream.

Ground Water

The Empedrado WSA lies within the state-declared Rio Grande Underground Water Basin (1956). Two known springs occur in the WSA, one of which is undeveloped. Three water wells also exist in the WSA.

SOILS

The major limitations to soil productivity and use of soils in the Empedrado WSA are susceptibility to erosion, the presence of heavy textural soils derived from shale (some with shallow depths to bedrock), and sodium or alkali content.

VEGETATION

The Empedrado WSA is a river-bottom site consisting of the channel and banks of Arroyo Chico and Torreon Wash. Arroyo Chico is now a perennial stream supporting riparian habitat. Refer to Table 3 and Map 3 for further information on the vegetation of this WSA. No threatened or endangered plant species have been noted in the Empedrado WSA.

WILDLIFE

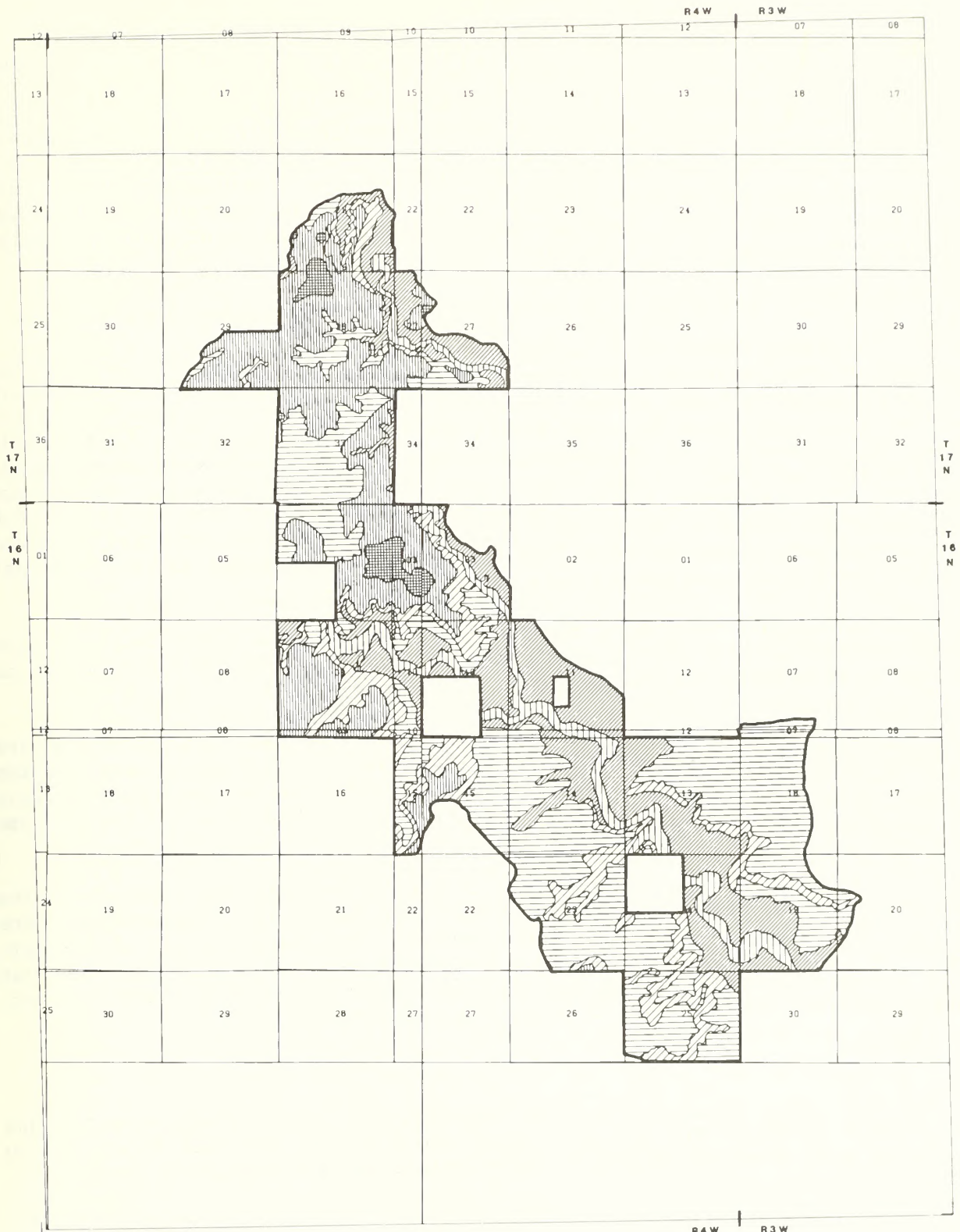
Two ecotypes in the Empedrado WSA provide habitat for wildlife. The pinyon-juniper type potentially supports 136 vertebrate species, including 3 amphibian species, 64 varieties of birds, 50 species of mammals, and 19 reptile species. Wildlife common to the pinyon-juniper type in the WSA are mule deer, gray fox, golden eagles, ravens, red-tailed hawks, and great horned owls.

The grama-galleta grassland ecotype (which includes some riparian sites) potentially supports 132 vertebrate species. This includes 7 species of amphibians, 68 of birds, 37 of mammals, and 20 of reptiles. Common animals in this ecotype include coyotes, badgers, prairie dogs, scaled quail, horned larks, and kestrels. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Rio Puerco Resource Area.) No threatened or endangered wildlife species are known to exist in this WSA.

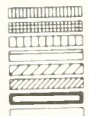
TABLE 3
VEGETATION, EMPEDRADO WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Juniper-pinyon woodland	10	N, S, E, W	25	12.20	Poor-fair	One-seed juniper, galleta grass, Bigelow sage	15	550	Black grama, little blue-stem, Indian ricegrass, needle and thread grass	190-Rock Outcrop-Travertine-Silla Complex
2	Grama-galleta steppe	3	Nearly flat	12	33.60	Poor-fair	Blue grama, broom snake-weed, alkali sacaton	20	60	Indian rice-grass, blue grama, big sagebrush, true mountain mahogany	010-Travertine-Silla-Shingle-Rock Outcrop Complex
3	Grama-galleta steppe	Less than 1	S and E				Narrowleaf cottonwood, Rio Grande cottonwood, Russian olive, salt cedar, NM olive, black greasewood, salt grass, alkali sacaton, western wheat-grass, vine mesquite, sedges, spikebrush, horsetail, rush, reed, cattail, bulrush, wolfberry				
4	Juniper-pinyon woodland	4	N, S, E, W	26	9.45	Fair	Galleta grass, alkali sacaton, one-seed juniper	20	450	Indian rice-grass, bottlebrush squirrel-tail, blue grama, galleta grass	141-Penistaja Bond Association
5	Juniper-pinyon woodland	38	N, S, W	14	26.59	Poor	Shadscale, galleta grass, blue grama	10	225-475	Alkali sacaton, sideoats grama, Indian rice-grass, Bigelow sage	011-Travertine-Silla-Shingle-Eroded Rock Outcrop Complex
6	Grama-galleta steppe	Less than 1	N, S, E, W	21	9.85	Poor-fair	Alkali sacaton, four-wing salt-bush, black greasewood	25-30	900	Alkali sacaton, giant blue grama, vine mesquite, galleta grass	Alkali Alluvial Christian-burg Clay Gullied land

MAP 3 VEGETATION, EMPEDRADO WSA



RANGE SITE 1 - 2,001 ACRES
 RANGE SITE 2 - 160 ACRES
 RANGE SITE 3 - 325 ACRES
 RANGE SITE 4 - 3,394 ACRES
 RANGE SITE 5 - 1,185 ACRES
 RANGE SITE 6 - 2,045 ACRES
 NM-010-063
 SECTIONS



BUREAU OF LAND MANAGEMENT

VISUAL RESOURCES

A current visual resource inventory indicates Empedrado contains good scenic quality (B) resources.

From lava-capped mesa tops, the Empedrado WSA offers views of Cabezon Peak, Mesa Cortada, Mesa la Azabache, Arroyo Chico, and the many volcanic plugs that surround Mesa Chivato. Portions of the Cabezon, Ignacio Chavez, and La Lena WSAs can be seen. Empedrado is an integral part of the viewsheds for Ignacio Chavez WSA, Ignacio Chavez Wilderness Inventory Unit, Chamisa Inventory Unit, and the La Lena WSA.

CULTURAL RESOURCES

Cultural resource inventory within the Empedrado WSA consists of surveys of approximately 2 sections (1,280 acres) and numerous small (5-acre or less) in-house and energy-development-related surveys. These limited surveys have identified 24 sites within the WSA boundaries, located generally along and overlooking the two major drainages (Torreon Wash and Arroyo Chico) that bisect the WSA. Identified site types include Archaic, Navajo and Historic. Over half the known sites are unidentified and are carried in BLM site inventory files as locations only. High Pueblo site densities recorded for areas just outside this WSA suggest that substantial evidence of prehistoric pueblo occupation exists within this WSA.

Existing surveys have reported only one Archaic site, located above Canada de Las Lomitas on the north side of the WSA, but the probability of Archaic sites within this WSA is high.

Seven Navajo sites are recorded within the WSA, six of which are habitation sites. Little temporal data is available for these Navajo sites (none have been tested). Ethnohistorical information indicates Navajo occupation of the middle Rio Puerco Valley (and the WSA) occurred both before and after the Long Walk Period (1864-1868).

Historic use of the middle Rio Puerco drainage (and therefore the WSA) has been moderately extensive (refer to Table 4). Spanish settlers entered the valley before the 18th century, and remnants of a Hispanic population remain today. Two historic sites are recorded within the WSA, one being a Historic Spanish structure and the other a Historic trash scatter. Traditional uses included livestock grazing and farming.

AIR QUALITY

Under the Clean Air Act (as amended, 1977), BLM-administered lands were given a Class II air quality rating, which allows moderate deterioration associated with moderate, well-controlled industrial and population growth.

TABLE 4

ARCHAEOLOGICAL SEQUENCE FOR RIO PUERCO RESOURCE AREA
(after Dittert, 1959)

Cultural Type	Time	Cultural Period	Time
PaleoIndian	Before 250 B.C.	Pueblo II	870-950 A.D.
Archaic	Before 250 B.C.- 700 A.D.	Pueblo II	950-1100 A.D.
	(500-700 BMIII)	Pueblo III	1100-1200 A.D.
Basketmaker	700-800 A.D.	Pueblo III-IV	1200-1400 A.D.
		Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable or salable minerals is occurring within the boundaries of the Empedrado WSA. As of August 1982, a total of 27 mining claims have been staked within the WSA and 11 oil and gas leases issued (refer to Map 4). No active mines or wells exist within WSA boundaries.

Table 5 indicates the highest potential for development is associated with the coal and humates that occur in the Mesaverde Group and oil and gas associated with the sedimentary rocks of Jurassic and Cretaceous age. The geologic environment, inferred geologic processes, reported mineral occurrences, and deposits indicate a moderate to high favorability for the accumulation of these mineral resources (refer to Maps 5 and 6). The completion of a successful exploration program could lead to the development of a moderate-sized coal surface mine in the northern half of the WSA.

WATERSHED

Arroyo Chico, which is part of the Rio Puerco, drains the Empedrado WSA. The Rio Puerco watershed is one of the major tributaries of the Rio Grande, embracing approximately a third of the drainage that lies in New Mexico above the Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth of the waters of the Rio Grande (6 percent), yet it is the source of over half (56 percent) of the sediment that obstructs the main Rio Grande channel (Waite 1972). The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by cattle and sheep overgrazing in the late 1800's and early 1900's. The average rate of erosion for the WSA is moderate.

LIVESTOCK GRAZING

Five grazing allotments occur in this WSA (refer to Map 7); all of them have acreage in other WSAs. The WSA supports approximately 1,340 Animal Unit Months. Table 6 displays grazing information pertaining to these five allotments, and the allotment discussions give number of range improvements and Allotment Management Plan (AMP) information.

Most of the ranchers holding leases in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. Most of them live in Albuquerque or Bernalillo near their jobs and primary sources of income. Therefore, the weekends are the time when they can attend to their grazing allotments, and the pickup truck has partially replaced the horse as a major livestock management tool.

MAP 4 EMPEDRADO WSA MINING CLAIMS AND MINERAL LEASES

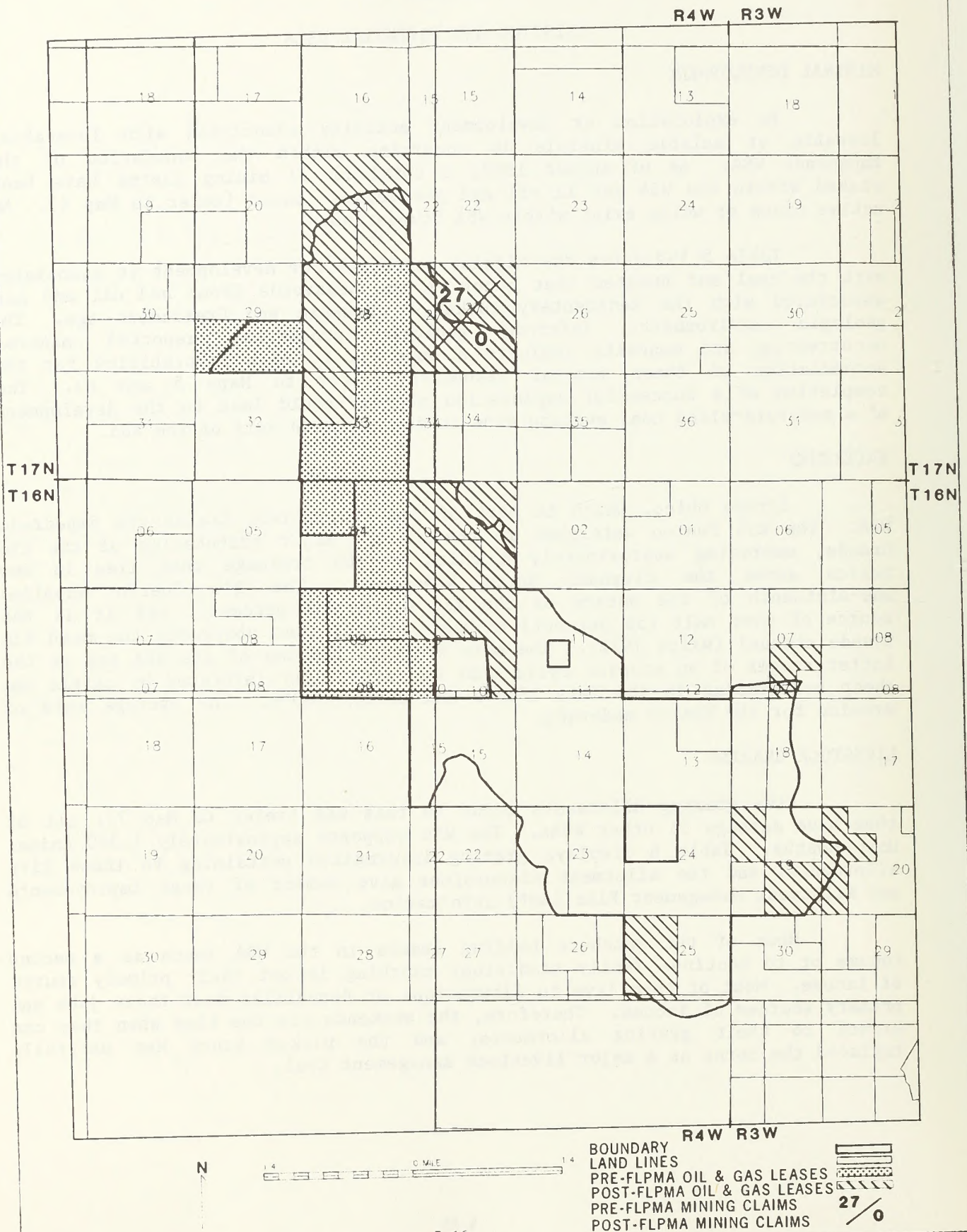


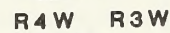
TABLE 5
MINERAL POTENTIAL
EMPEDRADO WSA

Commodity	Associated Environment	Mineral Potential	Acreage
Uranium	Morrison Formation (Jurassic); Primary and redistributed mineralization in arkosic sandstones; mineralization generally restricted to channel sandstones within deltaic, braided-stream complexes. Minor occurrences reported from the base of the Dakota Formation (Cretaceous).	Low	NC ^a /
Oil and Gas	Sedimentary rocks of Jurassic and Cretaceous age; generally stratigraphic traps in sandstone associated with paleostrand lines or buried aeolian sand dunes.	Moderate High	388 ac. 9,022 ac.
Coal, Humate	Mesaverde Group (Cretaceous) Continental margin sediments	Moderate High	873 ac. 1,994 ac.

Source: New Mexico Bureau of Mines and Mineral Resources, 1984. Preliminary Report on the Geology and Mineral Resource Potential of the northern Rio Puerco Resource Area in Sandoval and Bernalillo Counties and adjacent parts of McKinley, Cibola and Santa Fe Counties, New Mexico. Open-file Report 211.

Note: ^a/Acreages on areas of low potential were not calculated (NC).

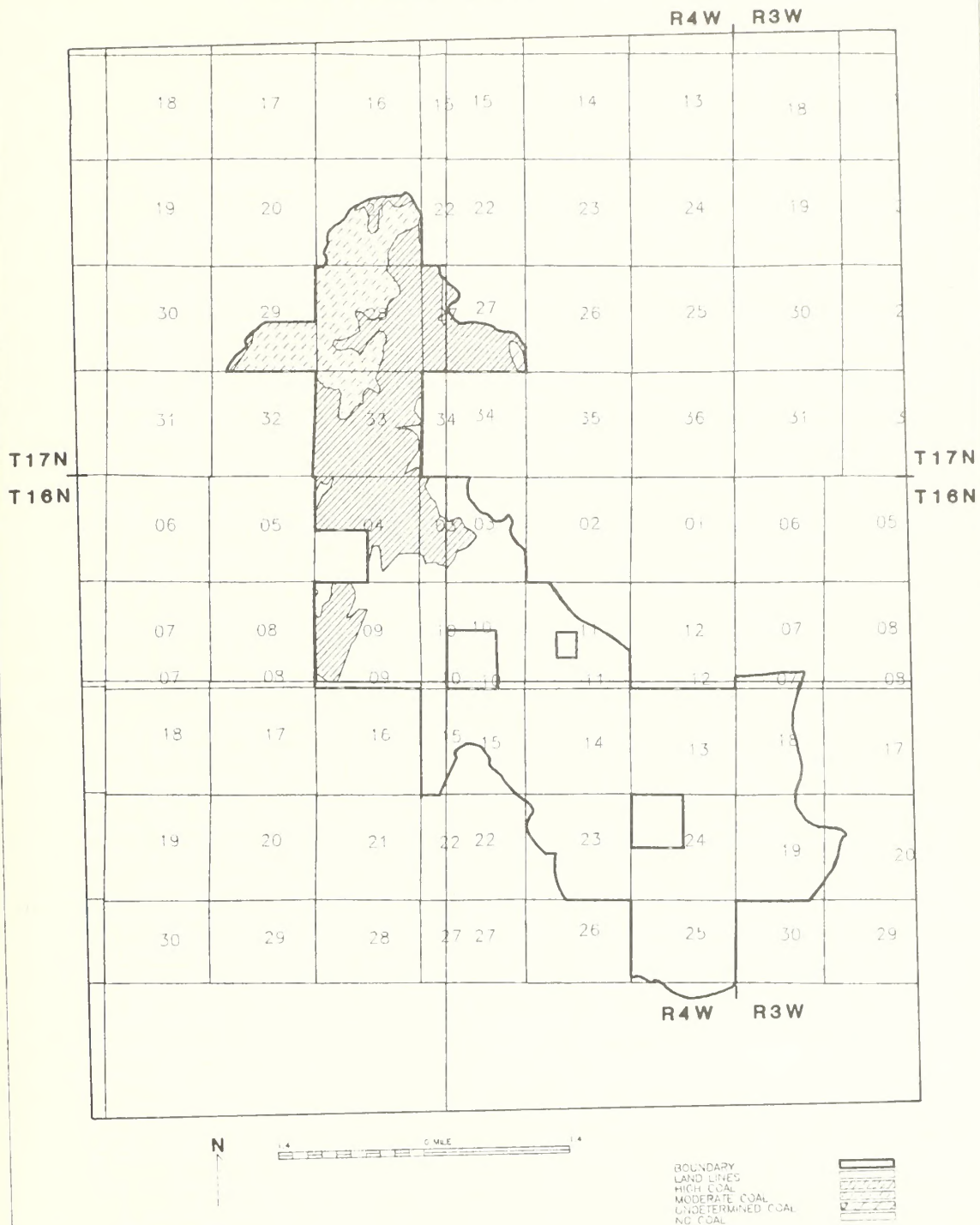
R4W, R3W



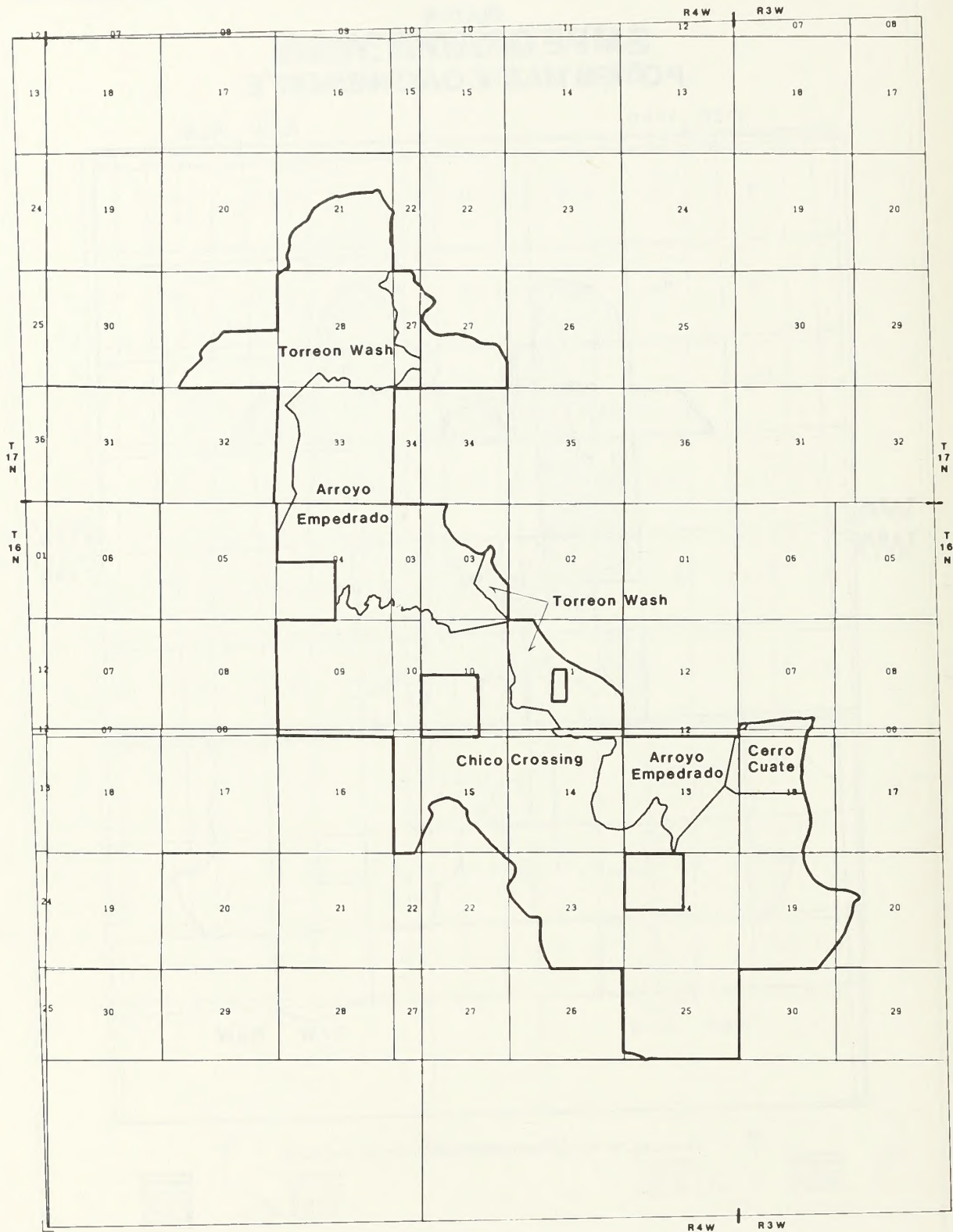
BOUNDARY
LAND LINES
HIGH OIL & GAS
MOD OIL & GAS



MAP 6
EMPEDRADO WSA
POTENTIAL COAL/HUMATE



MAP 7 RANGE ALLOTMENTS, EMPEDRADO WSA



SECTIONS
ALLOTMENTS
NM-010-063

BUREAU OF LAND MANAGEMENT

TABLE 6
RANGE ALLOTMENT INFORMATION

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Chico Crossing	0043	15,339	5,057	2	170 head	Yearlong
Torreon Wash	0035	7,976	1,486	1	88 head	Yearlong
Arroyo Empedrado	0036	4,536	2,609	2	59 head	Yearlong
Cerro Cuate	0041	3,886	258	1	58 head	Yearlong

Chico Crossing Allotment (#0043)

No range improvements are proposed for construction.

Torreon Wash Allotment (#0035)

Three of the five pastures in this allotment overlap the Empedrado WSA. These three pastures are grazed by livestock for 7 months each year. No range improvements are needed in the Empedrado WSA to implement the AMP.

Arroyo Empedrado Allotment (#0036)

All three pastures in this allotment have acreage in the Empedrado WSA. To implement the AMP, approximately 1 mile of drift fence along the west bank of Torreon Wash would need to be developed within the WSA.

Cerro Cuate Allotment (#0041)

All range improvements needed to implement the AMP are in place. No additional improvements are proposed for the portion of this allotment within the Empedrado WSA.

FOREST PRODUCTS

Pinyon-juniper woodland is the dominant forest type in the WSA. In the WSA, this type is of no commercial value and of little fuelwood value because of its low stand density. Some illegal woodcutting does occur.

RECREATION

The BLM has no visitor use data for the Empedrado WSA. The primary recreation use is believed to be some big game hunting and its associated activities -- camping, ORV use, and hiking. Letters received by the BLM show that scenic and geological sightseeing also occur in this WSA, particularly in the southern third of the WSA. The Continental Divide National Scenic Trail is presently proposed to pass through the southern portion of the Empedrado WSA.

The BLM's 1971 Unit Resource Analysis utilized the Recreation Information System (RIS) to describe the existing recreation environment. The RIS is an evaluation that rates the quality of experience a visitor can expect while participating in a specific activity. The Empedrado WSA lies within the Chico Arroyo RIS unit. Table 7 describes the key factors for each activity evaluated and its quality rating. The most current inventory of recreation opportunity (Recreation Opportunity Spectrum) has identified Empedrado as a mixture of semi-primitive non-motorized, semi-primitive motorized and roaded natural.

TABLE 7

RECREATION QUALITY EVALUATION

Activity	Quality Rating in Chico Arroyo	
	Unit	Key Factors
ORV Use	High	Soil, size, hazards, usability
Sightseeing (Scenery)	Medium	Landform, color, water, vegetation, uniqueness, intrusions
Primitive Values	Low	Scenic qualities, size, intrusions, wildlife, fisheries, water usability, uniqueness

EDUCATION/RESEARCH

Educational-interpretive potential exists in the Empedrado WSA in the form of a "natural laboratory" for the observation and study of natural systems. These values are concentrated in the south one-third of the WSA, and include several cultural sites as well as the riparian habitat located along Arroyo Chico.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the Empedrado WSA and continue some use today for firewood gathering and hunting. A recent survey near the WSA and interviews with officials of the Jemez, Zia, and Santa Ana Pueblos and the Canyoncito Navajo Reservation generally show that many places of religious significance exist in or near the Empedrado WSA, but that specific site locations are not known to the lay members of the tribes. Tribal elders know of and watch over such sites, and it would apparently be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional uses of this WSA will probably continue.

WILDLIFE

The southern portion of the WSA is used as winter range for deer from the Mesa Chivato. A small yearlong deer population is present.

Consumptive use of wildlife in the WSA includes some deer hunting, small game hunting, and trapping (primarily of coyotes). Non-consumptive use includes observation of wildlife incidental to sightseeing.

A wildlife habitat management plan for the Empedrado WSA proposes the construction of several enclosure fences with wildlife watering devices. These enclosures would help provide small plots of land with water, cover, and forage for small animals.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

The basic wilderness characteristics of the Empedrado WSA have been documented in the process of designating it as a Wilderness Study Area (USDI, BLM 1980). The following discussion elaborates on the quality of these characteristics.

Naturalness

The human imprints in the Empedrado WSA include a fenceline network, 9 earthen dams, sections of rusted drill pipe, 3 abandoned drillpads, a painted rock, 7 shotholes, and 4 routes, 15 miles. All are described in the Wilderness Intensive Inventory (USDI, BLM 1980), which also includes a discussion on the relative impacts of each individual intrusion on naturalness and, in some cases, the rehabilitation potential of the intrusions.

The Empedrado WSA is sparsely impacted by the actions of man, and all existing intrusions are well-buffered by the surrounding vegetation and/or topography. No single impact has an excessive visual impact from a north, south, east, or west viewscape. When the visitor views the Empedrado WSA as a whole, it generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable (USDI, BLM 1980).

Solitude

The BLM considers solitude as the state of being alone, removed from habitation, or in isolation. The broken terrain of the Empedrado WSA, including the mesa, rolling grasslands, and arroyos and washes, combined with the pinyon-juniper cover in the northwestern portion of the WSA, buffers user groups from each other and thus provides opportunities for solitude. However, the physical narrowness of the northern two-thirds of the WSA limits the opportunities to experience solitude. Low levels of visitor use concentrated in this portion could be tolerated and still provide the experience of solitude, though the experience would be less than outstanding.

Opportunities for Primitive and Unconfined Recreation

The BLM defines primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality. The Empedrado WSA contains some opportunities for hunting and sightseeing, but the overall quality of primitive opportunities has been rated low, as displayed in Table 7 (Recreation Quality Evaluation). Overall, opportunities for primitive recreation are not outstanding.

Special Features

The Empedrado WSA has special cultural, scenic, wildlife and vegetation features concentrated in the southern one-third of the WSA (refer to Figures 2 and 3). Although wildlife is not abundant, a good diversity of species is present. This diversity is expanded by the riparian vegetation along Arroyo Chico (refer to Figures 4 and 5). Several cultural sites have been noted, including petroglyphs. Expansive scenic vistas of the surrounding landscape features are provided from the mesas in this WSA. The southern portion of the WSA is an integral part of the viewsheds for surrounding WSA's and Wilderness Inventory Units.

Multiple Resource Benefits

The Empedrado WSA contains many natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM. (A more detailed discussion of the multiple resource benefits of wilderness designation may be found below in Section 6 in the discussion of impacts of the All Wilderness Alternative.)

Diversity In The National Wilderness Preservation System

Ecotypes Present

The Empedrado WSA, according to Robert G. Bailey (USDA, FS 1980), falls under Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This Sub-Province can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic ecotypes (Kuchler 1964).

Gram-Galleta Steppe. Total acres in the WSA are 2,264 (24 percent of the WSA).

Juniper-Pinyon Woodland Mosaic. Total acres in the WSA are 7,146 (76 percent of the WSA).

Map 8 displays these ecotypes. Vegetation Map 3 breaks each ecotype into more refined site categories that are narrated in Table 3 (Vegetation) located in Section 2 (Existing Resources).

Distance from Major Population Centers

The Empedrado WSA is within a day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census (USDC, BC 1981) as a Standard Metropolitan Statistical Area.

MANAGEABILITY

To be recommended as suitable, the Empedrado WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM



Figures 2 and 3 - These photos of the Empedrado WSA show the sculptured scenic beauty of public lands in the Rio Puerco Valley.



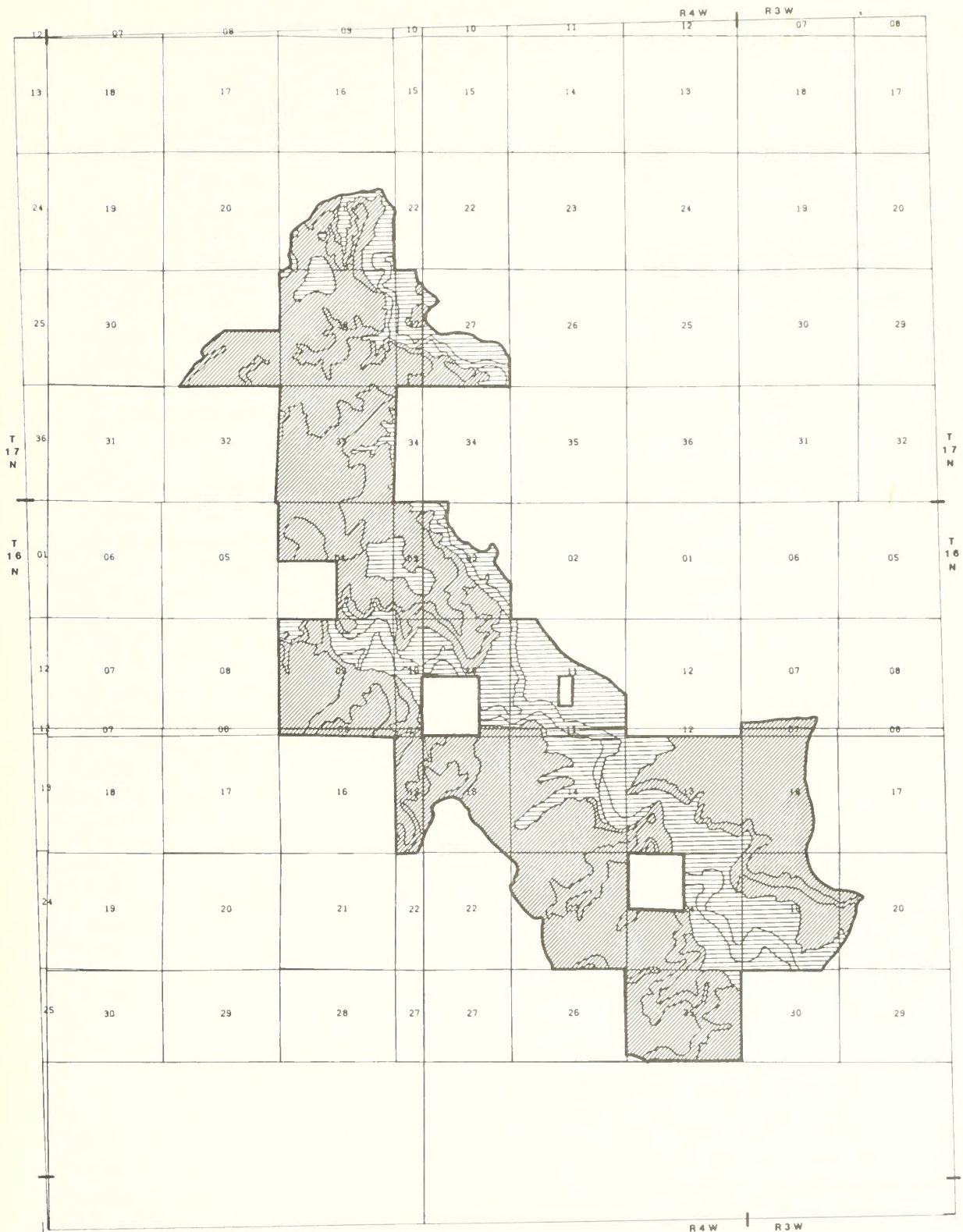


Figure 4 - The tamarisk-filled Arroyo Chico gives way to the near-vertical sandstone bluffs of the Empedrado WSA. These scenic resources are overshadowed by the ever-present local landmark — Bear's Mouth (on the Ignacio Chavez WSA).



Figure 5 - This photo presents the southern portion of the Empedrado WSA; this portion is being recommended for special designation in the Rio Puerco Draft Resource Management Plan (RMP). The winding Arroyo Chico in the middleground carves its way through the Rio Puerco Valley as grassy canyons cut deeply into the foothills of Mesa Chivato in the background.

MAP 8 ECOTYPES, EMPEDRADO WSA



JUNIPER-PINYON WOODLAND
GRAMA-GALLETIA STEPPE
TYPE LINES
SECTIONS
NM-010-063

must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall land status pattern.

Under wilderness management, reasonable access would be guaranteed to inholdings in the Empedrado WSA. Based on present use, these access needs would result in the occurrence of generally low levels of use incompatible with wilderness.

Empedrado contains 3 pre-FLPMA oil and gas leases, concentrated in the northern portion of the WSA. The remaining lease will not expire until 1989. Because the oil and gas resource has been assessed as both moderate and high and because of pre-FLPMA lease commitments, exploration and perhaps development could reasonably be expected to occur.

The configuration of the northern two-thirds of the Empedrado WSA does not lend itself to effective management. The WSA is extremely narrow, and flanked primarily by state and private land. A quarter-section of private land further breaks up the contiguous pattern.

The southern two-thirds of the WSA contains a quarter-section of private land, but is organized in a much more manageable land pattern. It is surrounded primarily by public land. However, this more manageable portion of Empedrado WSA is less than 5,000 acres in size (refer to Map 1).

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

This report has been prepared using public input obtained by large mailings, public meetings, open houses, and personal contacts. These efforts began during wilderness inventory and continue during the preparation of the statewide wilderness EIS.

Those people supporting WSA status for the Empedrado cited as justification its natural character, opportunity for solitude, and opportunity for primitive and unconfined recreation. Cultural and visual supplemental values were also noted.

Opponents of WSA designation discussed the effects of excluding the Empedrado WSA from possible future mineral exploration and development, the presence of human impacts, and possible limitations placed on ranch operations.

During the public comment period on the Albuquerque District Wilderness Draft EA (DEA -- USDI, BLM 1983), 29 public inputs were received on the Empedrado WSA. Ten inputs expressed opposition to wilderness designation. These commentors cited a lack of naturalness, and a high favorability for coal and humate, as well as a moderate favorability for uranium, thorium, oil and gas.

Nineteen inputs favored wilderness designation, stating that the Empedrado WSA contains outstanding opportunity for primitive recreation and solitude, and could be easily managed for wilderness. Resource conflicts generated by possible wilderness designation were not considered significant. One commentor felt the No Wilderness Alternative (with Area of Critical Environmental Concern designation to protect visual values) is not adequate to protect the WSA's scenic values.

Miscellaneous comments suggested combining the southern portion of the Empedrado WSA with the eastern portion of the Ignacio Chavez Wilderness Study Area. It was also suggested that the Draft EA does not adequately recognize high uranium and oil and gas potential of Empedrado WSA, but no further data was submitted to change the original assessment.

SUMMARY OF SCOPING

Table 8 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in the table, issues related to forest products, air quality, recreation, watershed, vegetation, visual resources, cultural resources, wildlife, Native American uses and education/research were

also considered in the District Final EAs and because little or no environmental impacts were identified, issues relating to these resources are not analyzed in this WAR.

TABLE 8

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
Expand the WSA	This was not considered further because it would require consideration of lands not nominated for wilderness study and lands not protected by interim management.
Combine Ignacio Chavez WSA and Empedrado WSA	This was not considered a manageable alternative.
Manage the southern 1/3 of WSA as an ACEC for visual values.	This alternative is more appropriately evaluated in the Rio Puerco Resource Management Plan (RMP).

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impact was identified to livestock grazing, however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

Three issues of concern were identified for the Empedrado WSA. These include uranium, oil and gas, and coal and humate potential, recreation off-road vehicle use, and wilderness values.

The Empedrado WSA contains moderate potential for oil and gas exploration on 388 acres and high potential for exploration and development on 9,022 acres. It also contains 873 acres of moderate potential and 1,994 acres of high potential for coal and humate exploration and development. Concerns regarding mineral potential include restrictions to mineral exploration and development under wilderness designation, as well as the potential impacts to the naturalness of the Empedrado WSA resulting from mineral exploration and development, if it is not designated wilderness.

Concerns were raised regarding the elimination of recreation off-road vehicle use under wilderness designation as well as the potential impacts to the naturalness of the Empedrado WSA resulting from increased recreation off-road vehicle use.

Analysis of wilderness values is required by the BLM Wilderness Study Policy.

The Empedrado WSA contains a variety of special features, including abundant cultural resource sites, high scenic quality in the southern portion of the WSA, and wildlife habitat supporting golden eagles, red-tailed hawks, great-horned owls, mule deer and gray fox.

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses two alternatives for the Empedrado WSA: the All Wilderness Alternative, and the No Wilderness Alternative (manage under the existing land use plan). The BLM has also considered other alternatives for this WSA which were not found to be reasonable or beneficial; therefore, these alternatives were dropped.

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 9,410 acres of public land within the Empedrado WSA would be recommended as suitable for wilderness designation. If the WSA was designated as wilderness, existing and potential uses would be regulated by the BLM's Wilderness Management Policy (USDI, BLM 1981).

Impacts to Wilderness Values

On any acreage designated as wilderness, the existing and potential uses would be regulated by the BLM's Wilderness Management Policy (1981). Wilderness values would be retained and protected over the long-term by management under this policy. The Empedrado WSA's existing natural character and the opportunities for solitude would be maintained, as well as its special values.

Restricting surface disturbing and mechanized activities associated with ORV use and mineral exploration and development would prevent increased access and provide long-term protection for a wide variety of existing natural resources. Restricting road building also prevents the cultural modifications to naturalness which inevitably accompany increased access. This includes such activities as trash dumping, removal of natural vegetation, the creation of temporary campsites, woodcutting and poaching. Those resources which would be maintained by restricting these activities include; 1. easily eroded soils; 2. current low level of noise and human activity which protects existing raptor nest sites, scale-quail and non-game species nest sites; 3. current wildlife habitat for both non-game and game species; 4. currently undisturbed cultural resources; 5. current "natural laboratory" setting; 6. current scenic quality B visual resources.

Wilderness designation would also maintain through long-term protection, the natural setting upon which Native American uses are often based.

Under the All Wilderness Alternative, the long-term protection of Congressional designation would significantly benefit the wilderness resources in the Empedrado WSA.

Impacts to Oil and Gas, and Coal and Humate Exploration and Development

Empedrado exhibits a mixture of moderate and high favorability for both oil and gas, and coal and humates. Out of 11 oil and gas leases, 3 are pre-FLPMA leases. Two will expire in 1985, and one will expire in 1989. Because of high and moderate favorability for oil and gas, and coal and humates (refer to Table 5 and Maps 5 and 6), it is reasonable to assume mineral exploration and perhaps development would be pursued.

Designating the Empedrado WSA as wilderness would withdraw it from appropriation under the mining laws and from leasing under the mineral leasing laws, subject to pre-FLPMA oil and gas valid existing rights. As economic conditions change, the development of the Empedrado WSA's oil and gas, and coal and humate resources may become attractive. Assuming favorable economic conditions, sufficient coal is present so that a moderate-sized coal mine could be developed in the WSA. The inability to do so could impact mineral exploration development in the long-term.

Impacts to Recreation Off-Road Vehicle (ORV) Use

ORV use includes two-wheel, three-wheel and four-wheel vehicles. None of these vehicles would be allowed within a designated wilderness area, unless by permit issued under the guidelines stated in the BLM Wilderness Management Policy. This would preclude back-country riding and exploring, vehicle camping, and vehicular access for hunting.

Impacts to Livestock Grazing

Grazing would continue at the approximate levels existing at the time an area enters the wilderness system. However, livestock operations in this WSA would be affected to some degree--though not significantly--by wilderness designation, as the result of limitations imposed on the maintenance of existing range improvements. Although grazing is a permissible and compatible activity with wilderness, limitations on the type of construction materials, locations of new improvements, and extent of vehicular access may occur in order to protect wilderness characteristics. Presently, the only range improvement proposed for construction in the WSA is a half-mile of drift fence. Casual use of vehicles for inspection or repair of existing facilities would be precluded. This could hinder the effective use of limited time to tend to weekend ranching operations.

NO WILDERNESS ALTERNATIVE (Proposed Action)

In the Albuquerque District Wilderness Draft Environmental Assessment, the Wilderness Analysis Report for this WSA (Appendix B) included an alternative to amend the existing land use plan (the No Wilderness Alternative). Since the Draft's publication in March 1983, a comprehensive land use planning effort was initiated in the Rio Puerco Resource Area. This effort is called a Resource Management Plan (RMP). The Empedrado WSA is now being considered in the Draft Rio Puerco Resource Management Plan (USDI, BLM 1985) for special designation. As a result, the scope of the No Action

Alternative for this WSA was changed in the Final Environmental Assessment to include the previously separate No Wilderness Alternative.

Until Congress makes its decision on wilderness designation, the WSA will be managed under the Final Interim Management Guidelines for Lands Under Wilderness Review (USDI, BLM 1983). If Congress designates it as wilderness, the WSA will be managed under the Wilderness Management Policy (USDI, BLM 1981).

If the WSA is not designated as wilderness, it will be managed under the No Wilderness Alternative, which would involve management under other than wilderness policy. Management would follow the guidelines of the Rio Puerco RMP.

The RMP is expected to be approved in late 1985 while the wilderness study process is still underway. Therefore, the RMP decision concerning this WSA may be incorporated into the Wilderness Study Report to be written later in this process. The Draft RMP proposal for the Empedrado WSA emphasizes the management of this area for visual values. If the approved RMP does not include a special designation for any portion of the Empedrado WSA, the WSA would be managed under the No Wilderness Alternative according to multiple use concepts without stressing visual values. The most probable uses of the Empedrado WSA would be livestock grazing, mineral exploration, and ORV use.

Mineral exploration would most likely include upgrading of existing vehicular ways, the creation of additional access routes, drilling operations and possibly blasting as well as surface mining. Recreational ORV use could be expected to increase because of the Empedrado WSA's close proximity to Albuquerque and the population expansions anticipated for this metropolitan area. Increased recreational ORV use has been noted the past 3 years and this trend is expected to continue. Upgrading of existing vehicular ways and the creation of additional access routes would likely occur in association with livestock grazing.

Impacts to Wilderness Values

Anticipated mineral explorations and development, increased ORV activity and greater use of motorized vehicles would result in disruption of wildlife habitat, the deterioration of visual values, as well as a decrease in opportunities to experience solitude. Over time, all of these uses could be expected to significantly impact naturalness.

The WSA's soils and vegetation are very susceptible to erosion and thus very sensitive to increased motorized activity. This would have a primary impact on the Empedrado WSA's vegetation as well as a wide variety of wildlife species.

Increased access and thus increased activity and noise levels would disrupt the nesting season for raptors who utilize the Empedrado WSA for nesting sites. Scaled quail, and non-game bird species utilize grasses and

shrubs along arroyos as well as rolling grasslands. Nesting seasons extend from February to August and particular species are unusually susceptible to increased activity during this time. Not only will habitat be destroyed and nesting activities interrupted, but total nest abandonment is likely. Increased activity and habitat damage would be expected to impact all game and non-game species and diminish the existing wildlife populations. Overall, the impacts to wildlife under this alternative would be significant because of the extensive ecosystem modifications.

Under this alternative, direct impacts to cultural resources from ORV use, though slight, would increase though time as user demand grows. Indirect impacts (the effects not directly caused by vehicles themselves) contribute substantially to loss of cultural resources by providing relative ease of discovery, access, tool and equipment transport, artifact and specimen transport, and speed of action. These indirect impacts would increase dramatically under the No Wilderness Alternative.

The natural setting that supports the special features, which include cultural sites, visual resources, and a variety of wildlife species, would be subject to increased surface disturbance and vehicular travel. Management under the No Wilderness Alternative would significantly degrade the Empedrado WSA's potential for use as a "natural laboratory".

The natural settings on which Native American uses are often dependant would be subject to increased surface-disturbing activities. The impacts to Native American uses of this WSA are unquantifiable, because of lack of access to proprietary information held by the various pueblos.

Not curtailing additional access and ORV activity would ultimately reduce the scenic quality B rating of the Empedrado WSA. ORV activity, both authorized and unauthorized is expected to accelerate in the WSA. Since additional roads predispose increased surface disturbance and cultural modification of visual resources, an expanded road network tends to shift visual resources from high scenic quality A & B, to a lower scenic quality of C & D. Surface modification resulting from potential oil and gas development or coal surface mining would significantly impact the Empedrado WSA's visual resources.

Because Empedrado is an integral part of the viewsheds for the Ignacio Chavez WSA, Ignacio Chavez Wilderness Inventory Unit, Chamisa Wilderness Inventory Unit and La Lena WSA, any reduced quality of the visual resources in the Empedrado WSA would have a far reaching effect.

To date no protective designation has been made for the Empedrado WSA. The cumulative effect of this lack of protective designation and non-wilderness management practices would be to degrade or eliminate the Empedrado WSA's wilderness characteristics. Under this alternative, the impacts to wilderness values could be significant over the long term because protective management of the WSA would not be ensured through Congressional designation.

If the Empedrado WSA were to be designated in the RMP as a Special Management Area, it could still be subject to mineral exploration and development. In addition, the RMP designation would be administrative, subject to revision, updating and amending. It would not provide the long term assurance of effectively managing the Empedrado WSA wilderness characteristics that Congressional designation would.

APPENDIX 6

IGNACIO CHAVEZ WSA (NM-010-020)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The Ignacio Chavez Wilderness Study Area (WSA; NM-010-020) contains approximately 9,961 acres of public land. The WSA is bounded on the north and west by public and private land, on the south by the Ignacio Chavez Land Grant (public land), and on the east by other public land (refer to Map 1).

The Ignacio Chavez WSA is located approximately 6 miles west of the village of Guadalupe, New Mexico, and 50 air miles northwest of Albuquerque. The WSA is adjacent to the Empedrado and La Lena WSAs (refer to Map 2).

The U.S. Geological Survey topographic maps that cover this 9,961-acre area are: Mesa Cortada, Cerro Parido and Guadalupe (7.5-minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Ignacio Chavez WSA is situated on the physiographic boundary between the Navajo and Datil Sections of the Colorado Plateau Physiographic Province. The Navajo Section includes much of the northern part of the WSA, and is characterized by outcrops of sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Landforms common to this part of the WSA include mesas, cuestras, rock terraces, volcanic plugs, retreating escarpments, canyons and arroyos. These landforms are in striking contrast to the southern portion of the WSA, which is contained within the Datil Section of the Colorado Plateau Province. Cenozoic Age volcanism created most of the Datil Section landforms, which include basalt plains, cinder cones, exhumed plugs and dikes, and extensive talus slopes.

Relief varies throughout the WSA from low-relief mesa tops to high-relief escarpments along plateau edges. The highest elevation is approximately 7,731 feet at Bear's Mouth, while the lowest elevation (approximately 6,000 feet) is found near the Arroyo Chico drainage.

Three principal landforms occur within the boundaries of the Ignacio Chavez WSA. These include: (1) the lava-covered surface of El Banquito Mesa, (2) the talus-covered slopes along the mesa edge, and (3) the incised cuesta topography that characterizes the remainder of the WSA.

The WSA has a semiarid climate with pleasant summers and fairly long, cold winters. The summer growing season rains account for approximately 65 percent of the total annual precipitation (15 percent falling during April, May, and June and 50 percent during July, August, and September). During the summer, drought periods occur with interspaced torrential showers that cause rapid runoff on open slopes and flash floods in the valleys and arroyos. The winters are dry; most moisture is snow, with some sleet and rain.

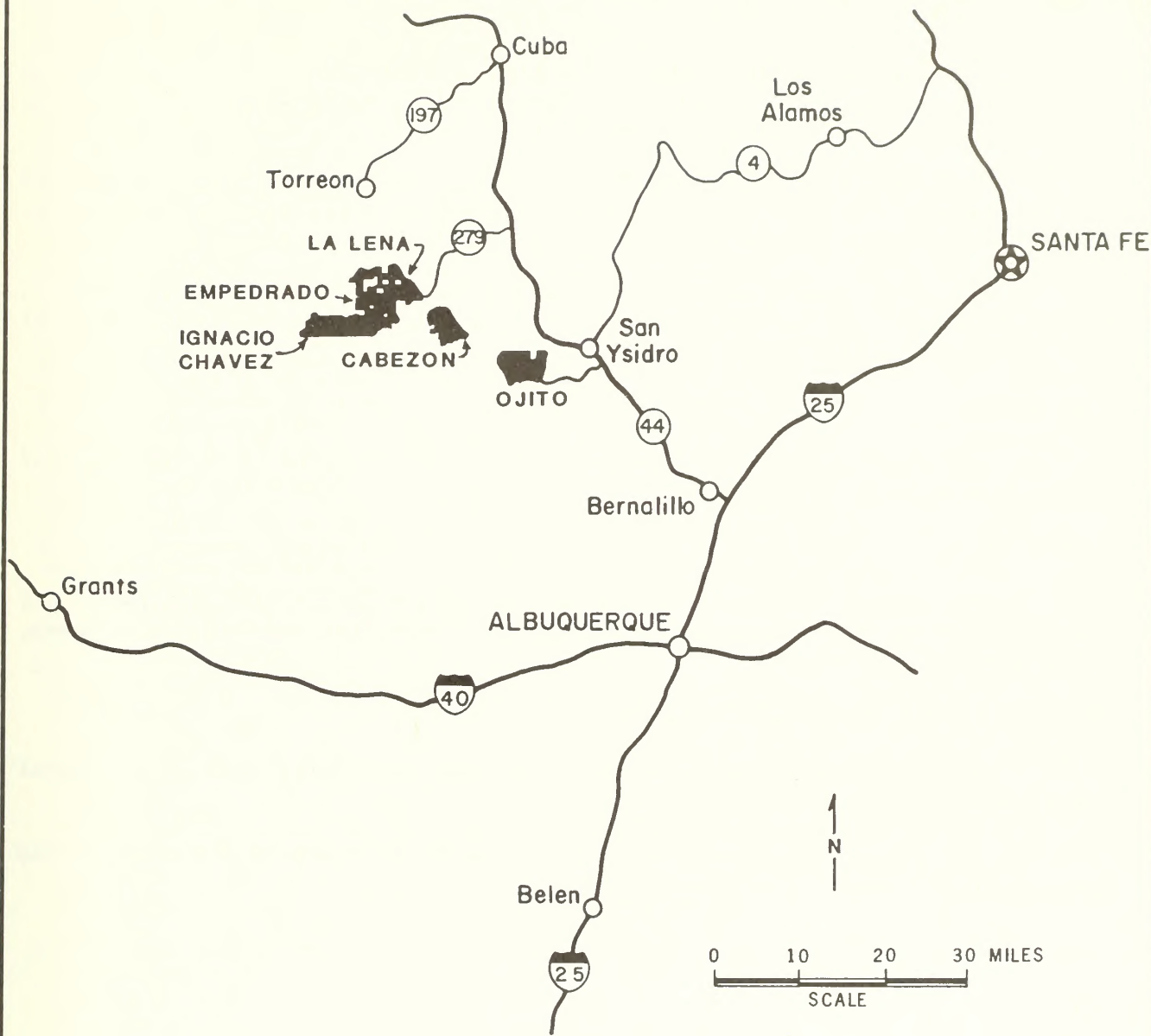
MAP 1
IGNACIO CHAVEZ
(NM-010-020)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY (PROPOSED ACTION)
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.
Source: USDI BLM, Albuquerque District, 1982





LEGEND
WILDERNESS STUDY AREAS

MAP 2
GENERAL LOCATION

Average annual precipitation is approximately 11 inches. The amount and distribution of precipitation is extremely variable. A measurable amount of snow can be expected at any time between October 1 and April 30; the average snowfall is 37 inches.

The average growing season is approximately 153 days, beginning at the end of March or the first of April, with above-average over-winter moisture and often extending into October.

Temperature is also variable. Extreme temperatures range from 102° F in the summer to -20° F in the winter. Average daily temperatures in the summer varies from 45° F in April to 70° F in July.

Westerly winds prevail in the winter but are affected by topography. The average velocity is 10 miles per hour and increases to 25-30 miles per hour during the spring windy season.

LAND STATUS

The Ignacio Chavez Wilderness Study Area consists of 9,961 acres of public land with no inholdings.

ACCESS

The Ignacio Chavez WSA can be reached by proceeding southwest off State Highway 44 onto state-maintained gravel roads that extend to the north, east, and west of the WSA.

PROPOSED ACTION, ALTERNATIVES AND ISSUES

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

The significant environmental impacts by alternative for each of the environmental issues are summarized in Table 2.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION
AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Wilderness
<p>oManage 9,961 acres as wilderness.</p> <p>-Exploration and development of 7 post-FLPMA oil and gas leases could be pursued only if they comply with the BLM <u>Wilderness Management Policy</u>.</p> <p>-9,961 acres would be closed to future mineral location.</p> <p>-9,393 acres of moderate potential, and 568 acres of high potential oil and gas, and 5,710 acres of high potential coal and humate would be closed to exploration and development.</p> <p>-Close 7 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 3 earthen dams, one developed spring and for the replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p>	<p>oManage 8,780 acres as wilderness.</p> <p>-Exploration of post-FLPMA oil and gas leases could be pursued only if they could comply with the BLM <u>Wilderness Management Policy</u>.</p> <p>-8,780 acres would be closed to future mineral location.</p> <p>-8,280 acres of moderate potential and 500 acres of high oil and gas potential, and 5,699 acres of high coal and humate potential would be closed to exploration and development.</p> <p>-Close 7 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 3 earthen dams, one developed spring and replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p> <p>oManage 1,181 acres without wilderness protection.</p> <p>-Current grazing levels would continue.</p> <p>-Vehicle use would be allowed to continue on 1,181 acres.</p> <p>-1,181 acres would be open to oil and gas, and coal leasing and mineral location.</p>	<p>oManage 9,961 acres without wilderness protection.</p> <p>-Vehicle use would be allowed to continue.</p> <p>-9,961 acres would be open for oil and gas leasing and mineral location.</p> <p>-Current grazing levels would continue.</p>

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Wilderness Values	Major Environmental Issues	
		Recreation Off-Road Vehicle (ORV) Use	Mineral Exploration
All Wilderness (9,961 acres)	<ul style="list-style-type: none"> -Maintain Ignacio Chavez's natural character. -Maintain opportunities for solitude and primitive and unconfined recreation. -Protect vegetation from surface disturbing activities. -Maintain current high scenic quality A. -Maintain current undisturbed condition of cultural sites. -Maintain one of the most diverse and productive wildlife habitat areas on BLM administered lands in northwest New Mexico, including critical elk and deer winter range. The Ignacio Chavez WSA contains habitat that supports mule deer, elk, turkey, black bear, golden eagles, red-tail hawks. -Retain, through long term protection, the "natural laboratory" setting which is a function of the integration of 3 environmental zones. 	<ul style="list-style-type: none"> -7 miles of vehicle ways would be closed for recreation uses, including 2-wheel, 3-wheel, and 4-wheel vehicles. This will impact backcountry exploration, vehicular camping, and some hunting. 	<ul style="list-style-type: none"> -Eliminate mineral exploration and development for 9,393 acres of moderate potential and 568 acres of high potential for oil and gas; and 5,710 acres of high potential for coal and humates, if developed for a small scale mining operation.
Amended Boundary (8,780 acres) (Proposed Action)	<ul style="list-style-type: none"> -Same as All Wilderness Alternative. Although naturalness would be affected on the 1,181 acres released, wilderness values are marginal in this region. Therefore, no overall impact on wilderness values would result. -Enhance natural character by removing retention dams reevaluated as substantially noticeable. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative except for 1,181 acres eliminated where vehicle activity would continue. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative except for 1,181 acres eliminated which could be explored for oil and gas, and coal and humates.

TABLE 2 (Concluded)

Alternative by WSA/Acreage	Major Environmental Issues		
	Wilderness Values	Recreation Off-Road Vehicle (ORV) Use	Mineral Exploration
No Action (9,961 acres)	<p>-Over the long term, anticipated mineral exploration and development, increased ORV activity, would result in an increased road network and access throughout the WSA. This access would attract activities which would:</p> <p>-Degrade natural character of the WSA by cutting wood, removal of natural vegetation, creation of informal campsites, trash dumping.</p> <p>-Reduce opportunities for solitude and primitive and unconfined recreation.</p> <p>-Modify existing natural vegetation through surface disturbance.</p> <p>-Degrade high scenic quality A.</p> <p>-Disturb nesting seasons for raptors and other species possibly to the point of nest abandonment.</p> <p>-Degrade critical deer and elk winter range.</p> <p>-Degrade some of the most productive wildlife habitat in northwest New Mexico, diminishing both non-game and game species, including mule deer, elk, turkey, black bear, golden eagles, red-tail hawks.</p> <p>-Degradation of cultural resources.</p> <p>-Significantly degrade potential for use as a "natural laboratory", particularly the blend of 3 environmental zones.</p>	No Impact.	No Impact.

SECTION 2

EXISTING RESOURCES

GEOLOGY

Structurally, the Ignacio Chavez WSA is relatively simple. There are few faults and only gentle folding (associated with the termination of McCarty's Syncline). The sedimentary rocks of the WSA dip at a low angle to the northwest into the San Juan Basin. The WSA is situated on the southeastern margin of the basin, approximately on the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dips, volcanic and sedimentary rocks crop out in many small cliffs and several spectacular escarpments (refer to Figure 1).

ENERGY AND MINERALS

Although some of the Ignacio Chavez WSA is dominated by basalt flows (capping the top of the Cebolleta Plateau), a large part of the WSA's geology is characterized by a thick sequence of sedimentary rock outcrops. This sedimentary sequence contains rock that ranges in age from Pennsylvanian to Cretaceous and is known regionally to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humate and clay.

PALEONTOLOGY

While the igneous rocks in the Ignacio Chavez WSA are non-fossiliferous, the exposed sedimentary rocks are known regionally to contain a varied fossil assemblage. The Point Lookout Sandstone contains trace fossils and plant fragments, while the Menefee Formation also contains plant fragments and vertebrate material. The Mancos Shale represents deposition under fully marine conditions, and its fauna is dominated by molluscs.

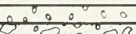




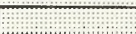

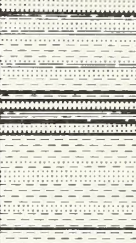
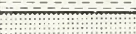

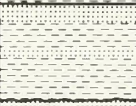





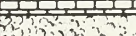














WATER

Surface Water

The WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande. It is considered a part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral. Runoff occurs many times throughout the year, but volume varies by season. Peaks commonly occur during the afternoon thundershower season from July through September, when tremendous runoff volumes are generated. Comparison of rainfall data with discharge data for this season shows that up to 99 percent of the annual recorded discharge may occur during this three-month period (Craig 1980).

FIGURE 1
STRATIGRAPHIC SECTION,
CABEZON, EMPEDRADO, IGNACIO CHAVEZ,
LA LENA, AND OJITO WILDERNESS STUDY AREAS

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER		LITHOLOGY
CENOZOIC	QUATERNARY		PEDIMENT		
	TERTIARY		SANTA FE		
	CRETACEOUS		PICTURED CLIFFS		
		LEWIS			
		CLIFF HOUSE			
		MENEFEE			
		POINT LOOKOUT			
		CREVASSE CANYON			
		GALLUP			
			MANCOS		
			DAKOTA		
	MORRISON FORMATION		BRUSHY BASIN		
			WESTWATER CANYON		
		RECAPTURE			
	JURASSIC	SAN RAFAEL	BLUFF		
			SUMMERVILLE		
			TODILTO		
			ENTRADA		
MESOZOIC	TRIASSIC	CHINLE FORMATION	UNNAMED SILTSTONE		
			PETRIFIED FOREST		
			POLEO SANDSTONE LENTIL		
			SALITRAL SHALE TONGUE		
			AGUA ZARCA		
PALEOZOIC	PERMIAN		SAN ANDRES		
			GLORIETA		
			YESO		
	PENNSYLVANIAN	MAGDALENA	ABO		
			MADERA		
SANDIA					
CAMBRIAN	MISSISSIPPIAN		ARROYO PENASCO		
	PRECAMBRIAN		PRECAMBRIAN		

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). Water yield from El Banquito Mesa ranges from 1 to 3 inches annually.

Ground Water

The WSA lies within the Rio Grande State-declared underground water basin. One developed spring (for livestock use) and two undeveloped springs exist in the WSA.

Ground water is usually not available at a reasonable depth except in the alluvium. The quality of this ground water ranges from fresh to moderately saline, but is usually marginal for domestic uses. Yields are usually very low (Craig 1980).

SOILS

Soils in the Ignacio Chavez WSA occur in three general categories: those developing on basalt at the higher, mesa-top elevations under pinyon and ponderosa pine; soils on the steep, stony sideslopes; and those developing on sandstones and shales at the lower elevations.

Soil erosion and limitations on vegetation productivity are generally greatest on soils in the third category. Soils in the second category are generally stable due to the high content of stones and boulders, and these soils have good vegetation production potential. The soils on the mesa tops of the Ignacio Chavez WSA have the most potential for high productivity because of favorable texture, depth, and precipitation.

VEGETATION

Table 3 summarizes the vegetation of the Ignacio Chavez WSA, grouped according to range sites. Map 3 displays the range sites and the present vegetation species (listed in Table 3). On Range Site 5, which occupies a majority of the WSA (5,132 acres--Map 3), blue grama, juniper, and galleta grass are the predominant species.

WILDLIFE

The Ignacio Chavez WSA is within one of the most diverse and productive wildlife habitat areas on BLM-administered lands in northwest New Mexico. Approximately 257 vertebrate species may inhabit the WSA, including 146 species of birds, 71 of mammals, 31 of reptiles, and 9 species of amphibians. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Rio Puerco Resource Area.)

The interspersed of pinyon-juniper woodland, ponderosa pine with oak understory, and open grassland parks on the Ignacio Chavez WSA, along with the protection afforded by the steep slopes and cliffs of Mesa Chivato, provide potentially excellent habitat for many species of wildlife. These species include at least six game species (mule deer, elk, Merriam's turkey, black

TABLE 3
VEGETATION, IGNACIO CHAVEZ WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Pine-Douglas fir	1	North, nearly flat	36	4.6	Good	Blue grama, galleta grass, broom snakeweed	25	1,100	Mt. muhly, Ariz. fescue, needle and thread grass	150-un-named 5 loam
2	Pine-Douglas fir	7	N, E, nearly flat	47	12.13	Good	Pinyon, Gambel oak, ponderosa pine	28	1,113	Ariz. fescue, Mt. muhly, prairie Junegrass, ponderosa pine	101-Gabazon-Basalt Outcrop Association
3	Pine-Douglas fir	26	N and E aspect	38	13.87	Fair-good	Ponderosa pine, Gambel oak, mutton blue-grass	25	850	Ariz. fescue, Mt. muhly, NM muhly, mutton blue-grass	101-Gabazon-Basalt Outcrop Association
4	Juniper-pinyon	24	N and E aspect	28	10.96	Poor-good	one-seed juniper, galleta grass, blue grama	15	450	Alkali sacaton, blue grama, Indian rice-grass, one-seed juniper	100-Basalt Outcrop-Orthents-Ustolls Complex
5	Juniper-pinyon	18	N and W aspect	43	5.58	Fair-good	Blue grama, one-seed juniper, galleta grass	20	450	Blue grama, black grama, NM feather-grass, bottlebrush squirreltail	100-Basalt-Outcrop Orthents-Ustolls Complex
6	Grama-galleta steppe	4	All aspects	18	6.39	Poor-good	Alkali sacaton, galleta grass, blue grama	45	2,500	Vine mesquite, alkali sacaton, blue grama, four-wing salt-bush	170-Kim Loam
7	Grama-galleta steppe	2	S and W	25	23.3	Fair	Alkali sacaton, galleta grass, broom snakeweed	10	225-475	Alkali sacaton, sideoats grama, Indian rice-grass, Bigelow sage	011-Traves-silla-Shingle Eroded Rock Outcrop Complex
8	Grama-galleta steppe	3	N	24	8.57	Fair	Galleta grass, blue grama, broom snakeweed	20	650	Western wheatgrass, bottlebrush squirreltail, Indian ricegrass, galleta	Penistaja Fine Sandy Loam
9	Grama-galleta steppe	5	N	22	11.20	Fair	Broom snakeweed, galleta grass, alkali sacaton	20	450	Indian rice-grass, bottlebrush squirreltail, blue grama, four-wing salt-bush	141-Penistaja Bond Association

	NM-010-020	
RANGE SITE 1	- 12 ACRES	[diagram]
RANGE SITE 4	- 2215 ACRES	[diagram]
RANGE SITE 5	- 5112 ACRES	[diagram]
RANGE SITE 6	- 1315 ACRES	[diagram]
RANGE SITE 8	- 1142 ACRES	[diagram]
RANGE SITE 9	- 105 ACRES*	[diagram]
Type Lines		

BUREAU of LAND MANAGEMENT

bear, tassel-eared squirrel, and mourning dove). The Ignacio Chavez WSA is considered important deer and elk habitat all year and has been assessed as critical winter range for these species. Other wildlife common to the area include coyotes, badgers, porcupines, cottontails, Gunnison's prairie dog, golden eagles, sharpshinned hawks, red-tailed hawks, Stellar's jays, pinyon jays, and gray-headed juncos. Cerro Parido and Bears Mouth are two locations within the WSA considered particularly important for golden eagle nesting sites.

Threatened and Endangered Species

The bald eagle and the peregrine falcon are the only threatened/endangered species likely to occur in the WSA, although no reported sightings have been made.

VISUAL RESOURCES

Based on landform, coloration, water, vegetation, lack of intrusions, and uniqueness, the Ignacio Chavez WSA has been rated as having a high scenic quality rating of A. Overall, the Ignacio Chavez WSA ranks as having a high value for its visual resources. The mesas and their escarpments, along with the diversity of vegetation, contribute to this high scenic value within the WSA. From El Banquito Mesa in the WSA, expansive scenic vistas into the Cabezon WSA, the Empedrado WSA, the La Lena WSA, and the Nacimiento Mountains are provided.

CULTURAL RESOURCES

Although the cultural resource inventory within this WSA has been very limited, it suggests that at elevations exceeding 7,000 feet, little probability exists of encountering sites with architectural features.

While early man did not habitually live in this region at these altitudes, he probably crossed them while traveling, hunting game, and obtaining vegetable foods and materials. Two sites are recorded within the boundaries of this WSA. One is historic but of unknown date, and the other has no defined cultural or temporal affiliation.

Although no known Archaic sites exist within the WSA, Archaic populations have made extensive use of the middle Rio Puerco Valley. It is reasonable to assume these people made some use of the resources within the WSA.

No specific site location predictions can be made for Navajo sites within the WSA, but ethnographic information on similar environmental settings (Black Mesa and Navajo Mountain) suggests that high mesa meadows have been preferred summer grazing locations.

AIR QUALITY

Ambient air quality monitoring data for the general area of the Ignacio Chavez WSA was collected during 1975-76 by the State of New Mexico

Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

Within the Ignacio Chavez WSA, those public lands north of the Ignacio Chavez Land Grant boundary are underlain by BLM-administered minerals. Only minor exploration and development has occurred on the WSA. As of January 1985, no mining claims were recorded and 7 post-FLPMA oil and gas leases issued on public lands within the WSA boundaries (refer to Map 4). No mining has occurred, and the level of mining exploration activity has been low.

Table 4 is a list of those minerals that are known or suspected to occur beneath the WSA. The highest potential for development is associated with coal and humates, which occur in the Mesaverde Group. The geologic environment, inferred geologic processes, reported mineral occurrences, and known deposits indicate a high favorability for the presence of these mineral resources (refer to Map 5). A successful exploration program could lead to the development of a small surface or underground coal mine. However, because of the broken steep terrain the development of a large scale mine is not considered probable in the foreseeable future. Oil and gas has been assessed as having high potential in 568 acres and moderate potential for the remainder of the WSA (refer to Map 6).

WATERSHED

The cyclic erosion that has occurred on the Ignacio Chavez WSA for several million years has had a major effect on the ecosystem. The effects of the most recent period of erosion on the lands in the region of the WSA were observed by explorers in the mid-nineteenth century. A major change in the natural vegetation of the rangelands in the WSA has occurred during the past 100 years, adversely affecting agricultural economics. Overgrazing of natural vegetation has increased erosive runoff; this, coupled with a climatic drought, was responsible for arroyos cutting into the WSA (Elliot 1979).

LIVESTOCK GRAZING

The Ignacio Chavez WSA includes parts of three grazing allotments (refer to Map 7); WSA allotment acreage supports 985 Animal Unit Months. Table 5 displays current grazing information pertaining to these three allotments.

Most of the operators grazing livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. They live in the vicinity of Cuba and Albuquerque, near their primary sources of income. Therefore, they can attend to their grazing allotments only on weekends, and the pickup truck has become increasingly important as a livestock management tool.

MAP 4

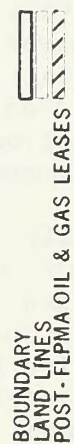


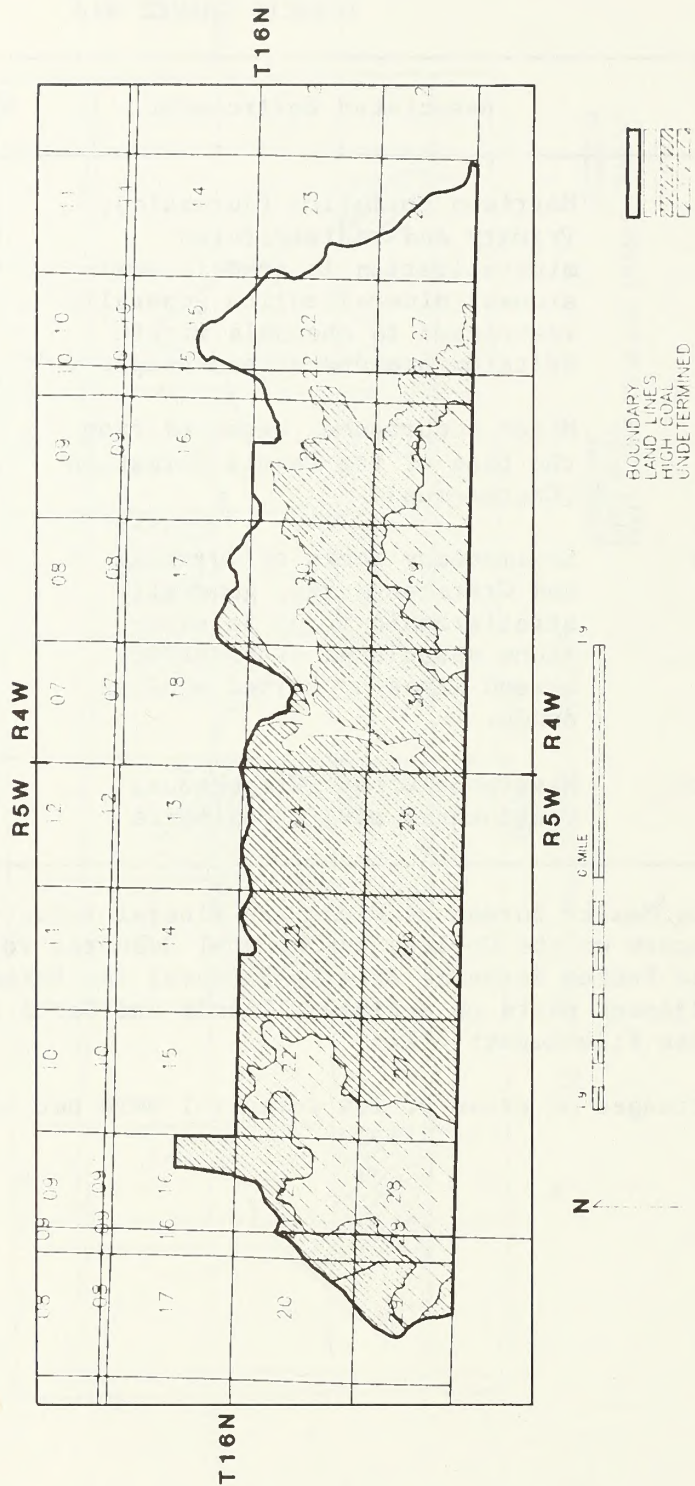
TABLE 4
MINERAL POTENTIAL
IGNACIO CHAVEZ WSA

Commodity	Associated Environment	Mineral Potential	Acreage
Uranium	Morrison Formation (Jurassic); Primary and redistributed mineralization in arkosic sand- stones; mineralization generally restricted to channels within deltaic, braided-stream complex. Minor occurrences reported from the base of the Dakota Formation (Cretaceous).	Low	NC ^a /
Oil and Gas	Sedimentary rocks of Jurassic and Cretaceous age; generally stratigraphic traps in sand- stone associated with paleo- strand lines or buried aeolian dunes.	High Moderate	568 9,393
Coal, Humate	Mesaverde Group (Cretaceous) Continental margin sediments	High	5,710

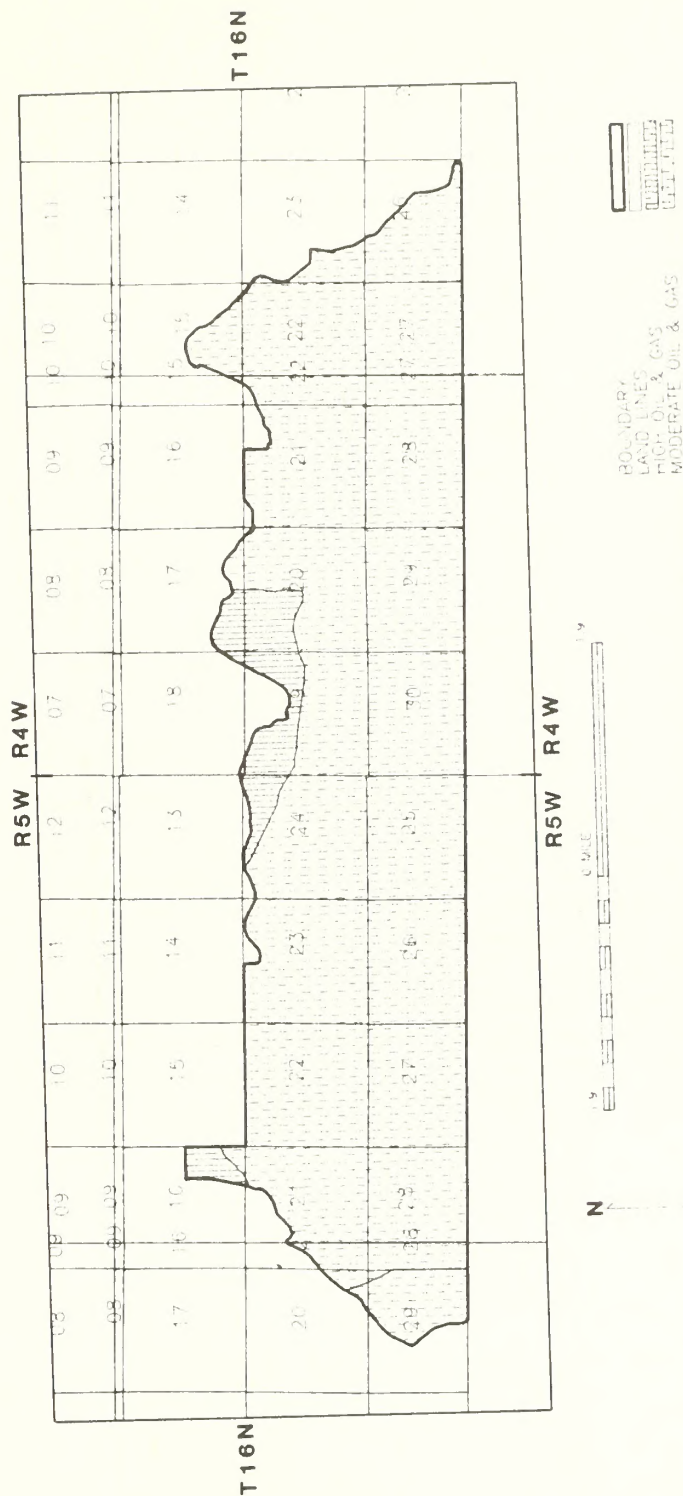
Source: New Mexico Bureau of Mines and Mineral Resources, 1984. Preliminary Report on the Geology and Mineral Resource Potential of the northern Rio Puerco Resource Area in Sandoval and Bernalillo Counties and Adjacent parts of McKinley, Cibola and Santa Fe Counties, New Mexico. Open File Report 211.

Note: ^a/Acreages on areas of low potential were not calculated (NC).

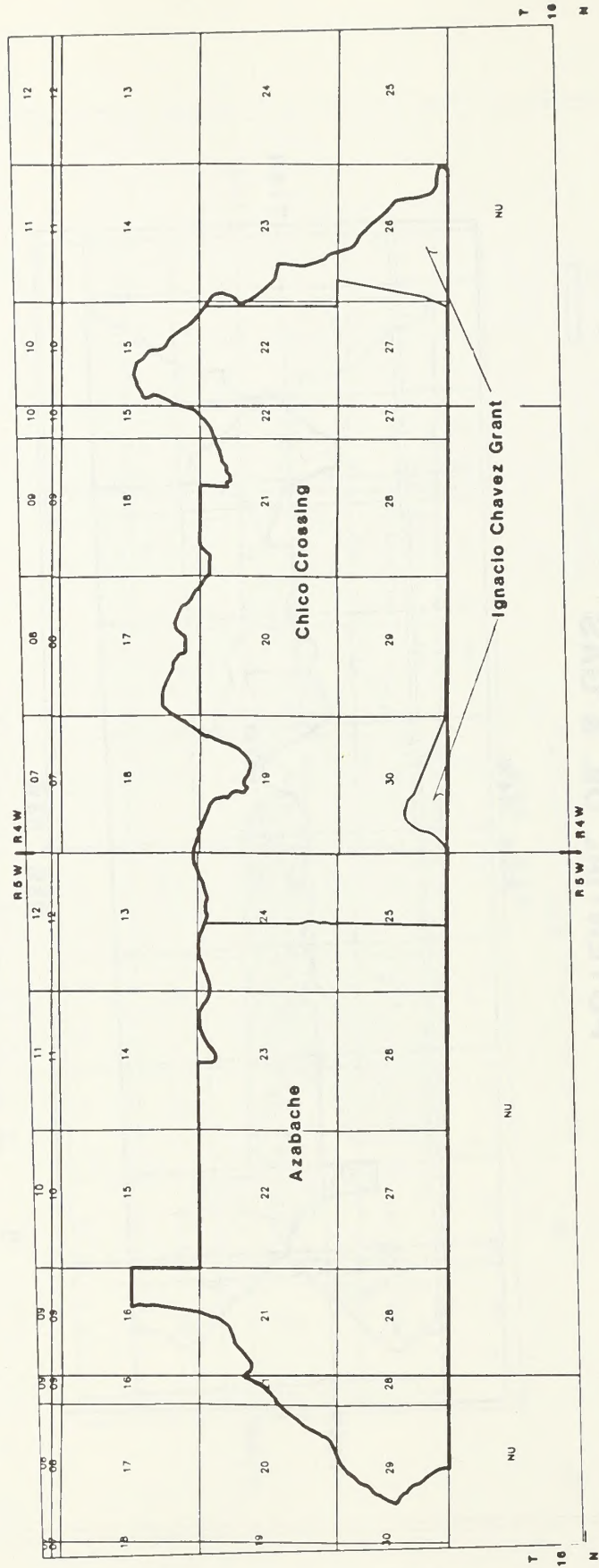
MAP 5 IGNACIO CHAVEZ WSA POTENTIAL COAL



MAP 6 IGNACIO CHAVEZ WSAPOTENTIAL OIL & GAS



MAP 7 RANGE ALLOTMENTS, IGNACIO CHAVEZ WSA



SECTIONS
NM-010-020
ALLOTMENTS

BUREAU of LAND MANAGEMENT

TABLE 5
RANGE ALLOTMENT INFORMATION

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Ignacio Chavez Grant	0050	27,076	418	4	200 head	yearlong
Chico Crossing	0043	15,339	5,306	2	170 head	yearlong
Azabache	0042	21,188	4,237	2	269 head	175 head yearlong and 94 head for 8 months

Ignacio Chavez Grant Allotment (#0050)

This allotment has a BLM Allotment Management Plan (AMP) that is not fully implemented. No range improvements are planned for construction in the WSA. Upon implementation of the AMP, the Guadalupe Allotment (with one permittee) will be combined with the Ignacio Chavez Grant Allotment. This allotment combination was proposed to facilitate a rest-rotation grazing system on these two allotments. The combination would increase the number of livestock that graze this WSA from 150 to 200 head. However, the length of time that the WSA would be grazed would be decreased, and the grazing system would allow critical growing season rest for one pasture each summer.

Chico Crossing Allotment (#0043)

Two spring developments are proposed for construction in this allotment.

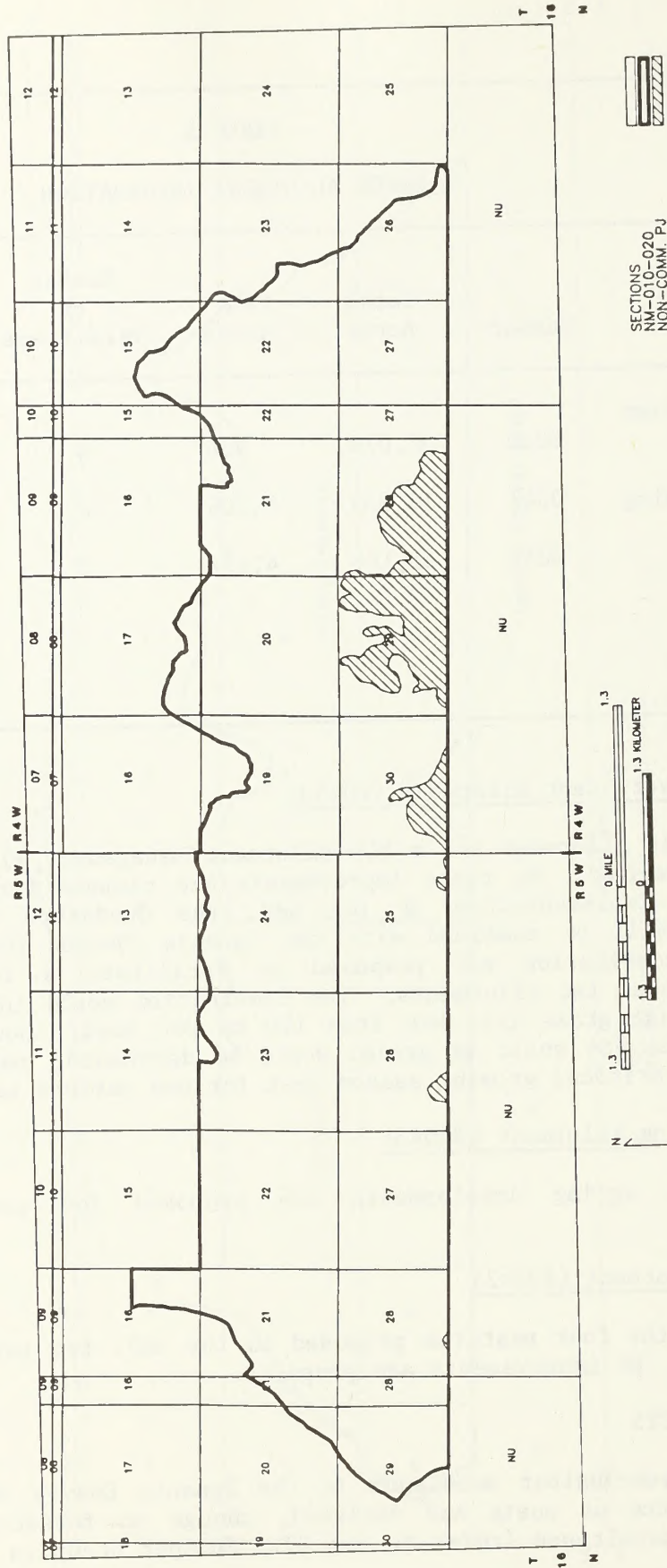
Azabache Allotment (#0042)

Of the four pastures proposed in the AMP, two pastures would contain WSA acreage. No improvements are proposed.

FOREST PRODUCTS

Pinyon-juniper woodlands in the Ignacio Chavez WSA could provide a marginal source of posts and fuelwood, though no forest products are under contract or permit use (refer to Map 8). Juniper occupies the lower elevation

MAP 8 FOREST TYPES, IGNACIO CHAVEZ WSA



BUREAU of LAND MANAGEMENT

sites near the sagebrush zone, but the trees are mostly scrubby and of little importance as a forest product. Pinyons occupy elevations between 5,200 and 8,200 feet. Larger junipers exist with the pinyons at these higher elevations, and could yield fenceposts or poles.

RECREATION

The Proposed Rio Puerco Livestock Grazing Management Program Environmental Statement (1978) divided the WSA into three Recreation Information System (RIS) units. Each unit was given a quality rating for a number of activities according to key quality factors, as shown in Table 6.

TABLE 6
RECREATION QUALITY EVALUATION

Activity	Ignacio Chavez West Unit	Ignacio Chavez East Unit	Chico Arroyo Unit	Key Factors
ORV use	low	low	high	Soil, size, hazards, usability
Sightseeing (scenery)	high	high	medium	Landform, color, water, vegetation, uniqueness, intrusions
Sightseeing (geological)	medium	medium	-	Extent, representative type, form, color, frequency of occurrence
Big Game Hunting	medium	medium	-	Game population, ease of movement, shooting opportunity
Primitive Values	high	high	high	Scenic qualities, size, intrusions, wildlife, fisheries, water usability, uniqueness

The RIS is used to describe the existing recreation environment. It indicates that the WSA contains high primitive and sightseeing values and that the diverse range of terrain, vegetation, and environmental transition zones greatly enhance recreation opportunities within the WSA. The most current inventory of recreation opportunity (Recreation Opportunity Spectrum) has identified the majority of the Ojito WSA as semi-primitive non-motorized (SPNM).

The WSA lies within New Mexico State Planning District 3. Recreation demand in this district is indicated in a study completed by the University of New Mexico's Bureau of Business and Economic Research (1975). The figures for regional recreation demand (Table 7) indicate the types of activities that the WSA may be required to support. The Ignacio Chavez WSA has become increasingly popular with the populations of Albuquerque and Santa Fe. Several organized group trips by the New Mexico Mountain Club have become annual events.

EDUCATION/RESEARCH

The variety of ecosystems located within the Ignacio Chavez WSA provide an exceptional opportunity to utilize a "natural laboratory" where natural systems can be observed. This diversity includes rolling grasslands, foothills, steep mesa slopes, canyons, and mesa tops. Each type supports its own characteristic vegetation and wildlife. How these different zones blend and complement one another's survival is as important to education/research goals as is the study of each zone singularly.

NATIVE AMERICAN USES

Native Americans (particularly the nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the area of the Ignacio Chavez WSA for firewood gathering and hunting. Some use continues presently.

Cerro Parido and Azabache Mesa are traditional snake- and eagle-catching areas. El Banquito Mesa is actively used by members of the Zia Pueblo for prairie dog hunting, and is also a prime area for projectile point and fetish collecting.

Recent survey and interviews with officials of the Santa Ana, Laguna and Acoma Pueblos and the Canyoncito Navajo Reservation show that many places of religious significance exist in and near this WSA. Specific site locations are not known to the lay members of these tribes because only tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional uses within the boundaries of this WSA by Native American populations are expected to continue.

WILDLIFE

The WSA is within the boundaries of the area covered by the Upper Rio Puerco Habitat Management Plan, a cooperative effort between the BLM and the New Mexico Department of Game and Fish. The following wildlife and habitat problems on the Ignacio Chavez WSA have been identified in the plan (USDI, BLM and NMDGF 1974; USDI, BLM 1981):

1. Low browse density and poor browse condition exist due to past heavy use by livestock and wildlife.

TABLE 7

REGIONAL RECREATION DEMAND, NEW MEXICO PLANNING DISTRICT 3
(based on visitor use days)

Activity	1975	1980	1985	1990
Pleasure walking	7,487,332	8,448,000	9,209,000	10,002,000
Birdwatching	1,394,103	1,573,000	1,714,000	1,862,000
Horseback riding	1,249,915	1,410,000	1,538,000	1,669,000
Photography/Painting	1,051,006	1,186,000	1,293,000	1,404,000
Sightseeing	925,059	1,043,000	1,138,000	1,236,000
Picnicking	786,083	887,000	967,000	1,050,000
Hiking	427,351	482,000	526,000	571,000
Rock hounding	424,745	479,000	522,000	567,000
Visiting historical sites	422,573	477,000	520,000	564,000
Camping	394,444	445,000	485,000	527,000
Small game hunting	247,551	279,000	304,000	331,000
Rock climbing	138,541	156,000	170,000	185,000
Backpacking	111,180	125,000	137,000	148,000
Big game hunting	98,151	111,000	121,000	131,000
Cross country skiing	33,875	38,000	42,000	45,000

Source: University of New Mexico, Bureau of Business and Economic Research
1975.

2. Poor-quality forage species exist in open parks due to past livestock grazing abuse.
3. Water distribution is poor.

BLM proposals for mitigating these problems include:

1. Prescribed burning to reduce pinyon-juniper invasion and forest litter, and to stimulate expansion of browse, cool-season grasses, ponderosa pine, and (in some cases) aspen.
2. Development and maintenance of one spring on the slope of Mesa Chivato.
3. Development of a game-bird enclosure.

The WSA provides about 1,500 hunter days, primarily for big game hunting, but also including some game bird and varmint hunting. Average deer hunter success is about 10 percent each year in the Mount Taylor Management Unit of which the WSA is a part (NMDGF 1981).

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work is documented in the wilderness intensive inventory (USDI, BLM 1980). In summary, man-made intrusions include a fenceline network, 6 earthen dams, 2 developed springs, 3 drill pads, and 10 two-track vehicular routes (7 miles). The BLM considers the overall effects of these imprints upon the entire WSA when assessing naturalness. This is a function of the size of the unit and the number and distribution of the impacts. Tremendous variation in terrain, environmental transitional zones, and vegetation provide the user with a wide variety of opportunities to experience a high-quality, primitive and undeveloped type of recreation. Overall, the Ignacio Chavez WSA generally appears natural. This quality is somewhat diminished in the eastern part of the WSA because of the presence of large earthen dams.

Opportunities for Solitude

The BLM regards solitude as the state of being alone or removed from habitations; isolation. The mesas, large canyons, volcanic plugs, spectacular escarpments, and numerous arroyos, washes, and smaller canyons of the Ignacio Chavez WSA provide expansive topographic diversity (refer to Figures 2, 3, and 4). This large diversity prevents one particular attraction from drawing large numbers of visitors; this in turn supports dispersed use and enhances solitude. The Ignacio Chavez WSA also displays generous vegetative screening. Overall, this WSA possesses outstanding opportunities for a user to experience solitude.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality. The Ignacio Chavez WSA contains abundant opportunities for a variety of quality primitive recreation experiences.

Backpacking, hiking, and camping opportunities within the WSA are considered excellent. Sightseeing opportunities are plentiful anywhere along the rims of Chivato, Cortada, La Azabache, and El Banquito mesas. Sightseeing related to historical, geological, botanical, archeological, and geological values, big and small game hunting, horseback riding, birdwatching, and photography exist throughout the WSA. Tremendous variation in terrain, environmental transitional zones, and vegetation provide the user with a wide variety of opportunities to experience a high-quality, primitive and undeveloped type of recreation.

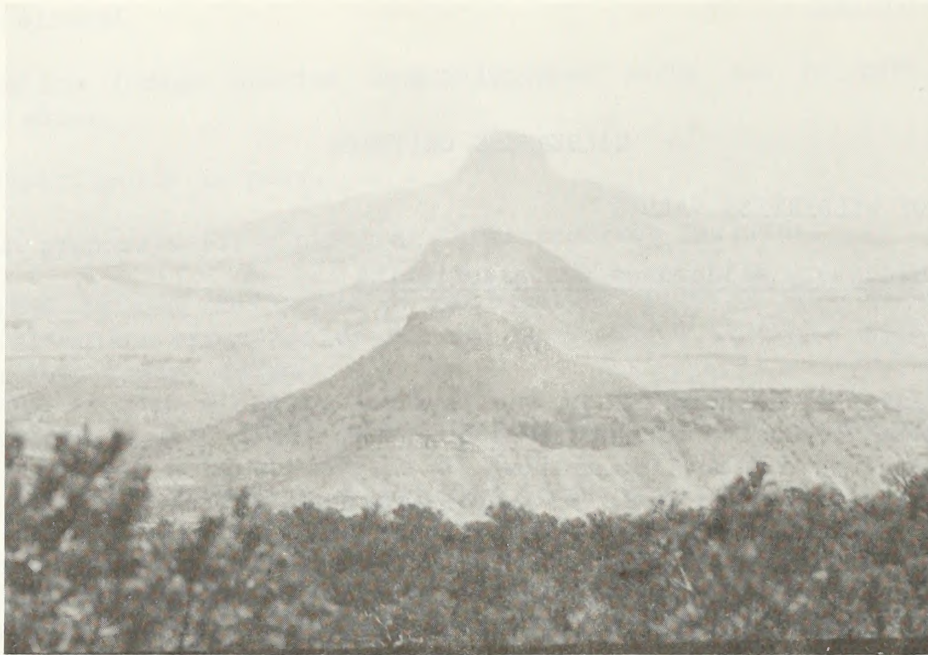


Figure 2 - View of the landforms in the eastern part of the Ignacio Chavez WSA.



Figure 3 - The southern portion of the Ignacio Chavez WSA looking east towards Cabezon Peak. The formation on extreme right of photo is known as "Bear's Mouth".



Figure 4 - Majestic views of Cabezon Peak such as this one are provided from four WSAs: the Ojito, the La Lena, the Empedrado, and the Ignacio Chavez. El Cabezon is the most prominent and best-known of the numerous volcanic plugs in the Rio Puerco Valley.



Figure 5 - Wildlife habitat provided on the Ignacio Chavez WSA.

Special Features

Visual appeal and the diversity of land forms and vegetation are perhaps the most outstanding special features of the Ignacio Chavez WSA. The rising green slopes and mesa tops contrast sharply with the arid desert lands to the north, east, and west.

Special wildlife features include a prairie dog colony, which provides an excellent opportunity for wildlife observers and sightseers to watch these interesting creatures. In addition, prairie dog towns are known for their importance as habitat for other wildlife such as burrowing owls and cottontails. (Prairie dogs are also important natural "tillers". By bringing new soil to the surface, they increase the water-holding capacity of the soil and retard erosion.) Cerro Parido and Bear's Mouth are important nesting sites for golden eagles. A flock of Merriam's turkeys and herds of mule deer and elk also utilize the WSA (refer to Figure 5). The Ignacio Chavez WSA is considered critical winter range for deer and elk. The faunal diversity in the WSA is a function of the integration of several ecotypes to form a varied and productive wildlife habitat. The Ignacio Chavez WSA is within one of the most diverse and productive wildlife habitat areas on BLM-administered lands in northwest New Mexico.

The WSA features sites of Indian, Spanish, and Anglo origin that may contain information needed to help piece together the history of this region.

Multiple Resource Benefits

As the result of its relatively undisturbed character, the Ignacio Chavez WSA contains a wealth of natural values. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM.

Diversity in the National Wilderness Preservation System

Ecotypes Present

The Ignacio Chavez WSA, according to Robert G. Bailey (USDA, FS 1980), falls under the Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into the Grama-Galleta Steppe, Juniper-Pinyon Woodland Mosaic, and Pine-Douglas Fir Forest ecotypes (Kuchler 1964). These are described below, from the lowest to the highest in elevation.

Gramma-Galleta Steppe. Total acres in the WSA are approximately 2,582 (26 percent of the WSA).

Juniper-Pinyon Woodland. Total acres in the WSA are approximately 7,367 (74 percent of the WSA).

Pine-Douglas Fir Forest. Total acres in the WSA are approximately 12 (.1 percent of the WSA).

Map 9 displays these ecotypes. Map 3 (Vegetation) breaks each ecotype into more refined site categories that are narrated in Table 3 (Vegetation--located in Section 2 of this document).

Distance to Major Population Centers

The Ignacio Chavez WSA is within a day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census as a Standard Metropolitan Statistical Area (USDC, BC 1981). It is within a 2 1/2-hour drive from the cities of Albuquerque and Santa Fe. (Refer to Map 2.)

MANAGEABILITY

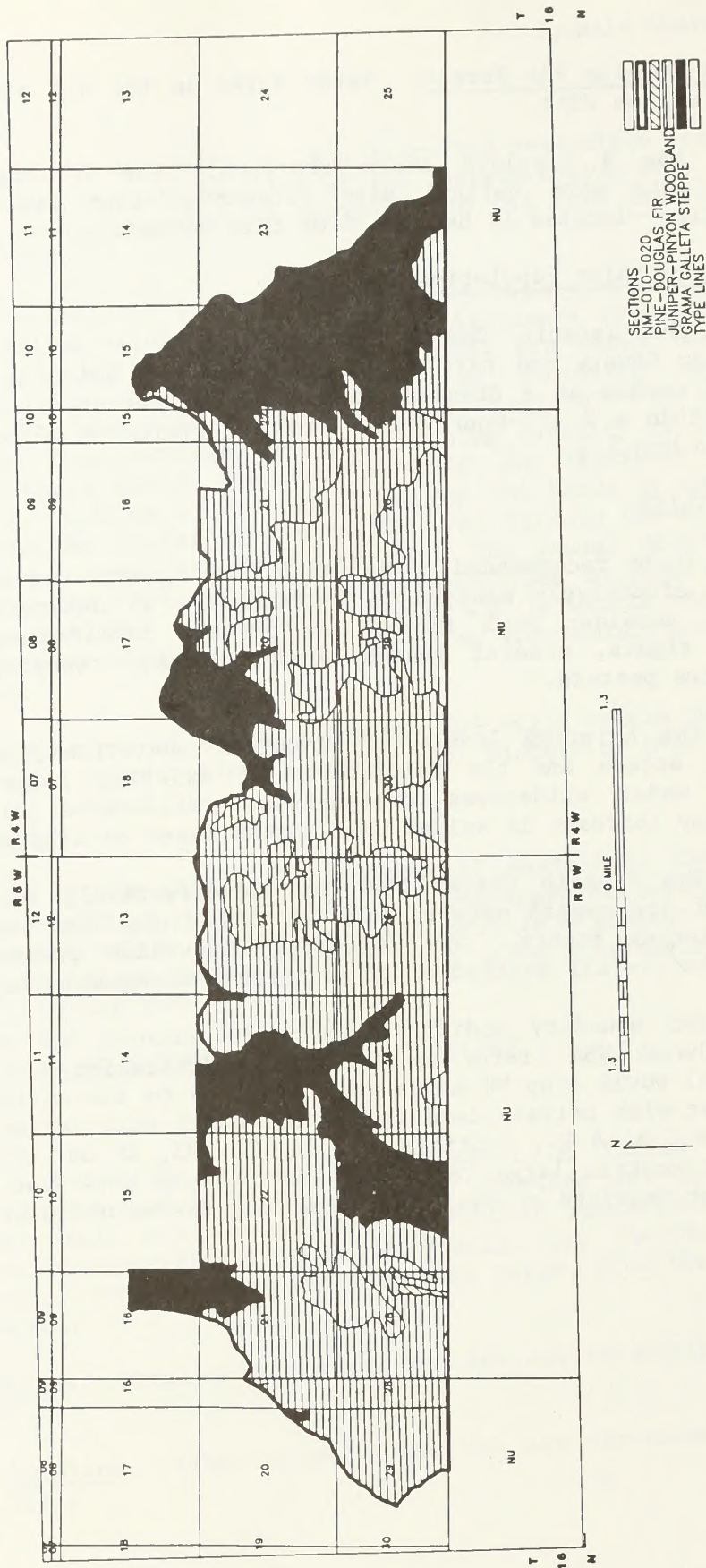
To be recommended as suitable, the Ignacio Chavez WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall land status pattern.

The existing levels of livestock operations, as well as necessary vehicular access and the maintenance of existing range improvements, would continue under wilderness designation. Wilderness designation would not prevent any increase in Animal Unit Months based on Allotment Management Plans.

The Ignacio Chavez WSA can be effectively managed for wilderness because of its rugged nature, lack of inholdings, and lack of encumbrance by valid existing rights. The following discussion presents opportunities to enhance the overall management of an already manageable unit.

Two boundary modifications would enhance the manageability of the Ignacio Chavez WSA (refer to Map 1). Modification 1 (T. 16 N., R. 5 W., Section 16) would drop 90 acres that protrude to the north, and are contiguous on the east with private land and on the north with Indian land. Modification 2 (T. 16 N., R. 4 W., Sections 15, 21, 22, 23, 26 and 27) would delete 1,091 acres that contain large retention dams. These have been reassessed as being significant imprints of man, thus impacting the naturalness of the WSA.

MAP 9 ECOTYPES, IGNACIO CHAVEZ WSA



BUREAU of LAND MANAGEMENT

SECTION 5

CONSULTATION COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

A full public involvement effort was made during the wilderness inventory and WSA-designation phases of wilderness analysis. In arriving at a decision on the Ignacio Chavez WSA's wilderness suitability, the BLM is using all public input generated thus far, along with comments received during the remainder of the environmental process.

Proponents of wilderness designation during the earlier public involvement efforts have cited the Ignacio Chavez WSA's wide ecosystem diversity, large size, and apparent natural character. Its close proximity to the cities of Albuquerque and Santa Fe, and thus its ability to serve such a large portion of New Mexico's population, were also pointed out.

Opponents of wilderness designation for the Ignacio Chavez WSA have discussed the effects of excluding the area from possible future mineral exploration and development, the presence of human impacts, and possible limitations on ranch operations.

During the public comment period on the New Mexico Wilderness Supplemental Draft Environmental Assessment (USDI, BLM 1983), 113 inputs on the Ignacio Chavez WSA were received from commentators. All but two inputs favored wilderness designation. Supporting reasons included the highly diverse ecosystems, spectacular overlooks, and excellent opportunities for solitude. Several spoke of the benefits to wildlife that could accrue through wilderness designation. Many of the general comments indicated the approximate 33,000-acre original Ignacio Chavez WSA should be examined for wilderness designation, regardless of its "split estate" considerations.

The two inputs opposing wilderness designation cited the Ignacio Chavez WSA's potential for oil and gas, and conflicts with grazing interests as reasons for their opposition.

SUMMARY OF SCOPING

Table 8 lists alternatives and issues considered for analysis in this WAR. These alternative and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in the table, issues related to forest products, air quality, recreation, watershed, vegetation, visual resources, cultural resources, wildlife, Native American uses, education/research were also considered in the District Final EA's and because little or no environmental impacts were identified, issues relating to those resources are not analyzed in this WAR.

TABLE 8

IGNACIO CHAVEZ
SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
Expand the WSA	This was not considered further because it would require consideration of lands not nominated for wilderness study and lands not protected by interim management.
Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impact was identified to livestock grazing, however, this issue will be discussed because of Statewide interest.
Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy.
Amended Boundary (remove 1,181 acres to improve manageability, and because of lack of naturalness)	This is the Proposed Action.
Issues Selected for Detailed Analysis	

Three issues of concern were identified for the Ignacio Chavez WSA. These include oil and gas, and coal and humate potential, recreation off-road vehicle use, and wilderness values.

The Ignacio Chavez WSA contains moderate potential on 9,393 acres and high potential for oil and gas exploration and development on 568 acres, and 5,710 acres of high potential for coal and humate exploration and development. Concerns regarding mineral potential include restrictions to mineral exploration and development under wilderness designations, as well as the potential impact to the naturalness of the Ignacio Chavez WSA resulting from mineral exploration and development if it is not designated wilderness.

Concerns were raised regarding the elimination of recreation off-road vehicle use under wilderness designation as well as the potential impacts to the naturalness of the Ignacio Chavez WSA, resulting for increased recreation off-road vehicle use.

Analysis of wilderness values issue is required by the BLM Wilderness Study Policy. The Ignacio Chavez WSA is a very popular hiking area, and also includes a variety of special features. Primary among these is the blending of 3 environmental zones producing one of the most varied wildlife habitats in northwest New Mexico, and an ideal natural laboratory to study the integration of these environmental zones. The Ignacio Chavez WSA is considered critical elk and deer winter range, and also supports turkey, black bear, golden eagles, and red-tail hawks. It also contains high scenic quality A visual resources as well as cultural resources.

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the Ignacio Chavez WSA: All Wilderness, Amended Boundary, and No Wilderness (manage under the existing plan).

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 9,961 acres of public land within the Ignacio Chavez WSA would be recommended as suitable for wilderness designation. On any acreage designated as wilderness, the existing and potential uses would be regulated in accordance with the BLM's Wilderness Management Policy (1981).

Impacts to Wilderness

On any acreage designated as wilderness, the existing and potential uses would be regulated by the BLM's Wilderness Management Policy (1981). High quality wilderness values would be retained and protected over the long-term by management under this policy. The Ignacio Chavez WSA's existing natural character and the opportunities for solitude and primitive and unconfined recreation would be maintained, as well as its abundant special values.

Restricting surface disturbing and mechanized activities associated with ORV use and mineral exploration, would prevent increased access and provide long-term protection for a wide variety of existing natural resources.

Restricting road building also prevents the cultural modifications to naturalness which inevitably accompany increased access including such activities as trash dumping, removal of natural vegetation, the creation of temporary camp sites, woodcutting and poaching. Those resources which would be maintained by restricting these activities include: 1. existing vegetation; 2. current low levels of noise and human activity which protects existing raptor nest sites, scaled quail, mourning dove, turkey, and non-game species nest sites; 3. current wildlife habitat for both non-game and game species considered some of the most productive in northwest New Mexico; 4. critical deer and winter range; 5. current visual resources; 6. currently undisturbed cultural resources; 7. current "natural laboratory" setting based on a blending of three environmental zones.

Wilderness designation would also maintain through long-term protection, the natural setting upon which Native American uses are often based.

Under the All Wilderness Alternative, the long-term protection of Congressional designation would significantly benefit the wilderness resources in the Ignacio Chavez WSA.

Impacts to Oil and Gas, and Coal and Humate Exploration and Development

The Ignacio Chavez WSA exhibits moderate favorability for oil and gas on 9,393 acres and high favorability on 568 acres. It also exhibits high potential for coal and humates on 5,710 acres. However, because of the broken, steep terrain the development of a large scale mine is not considered probable in the foreseeable future. A successful exploration program could lead to the development of a small surface or underground coal mine. (Refer to Table 4 and Maps 5 and 6.) However, because of the assessment of moderate and high favorability for oil and gas and coal and humate it is reasonable to assume that mineral exploration and perhaps development would be pursued.

Designating the Ignacio Chavez WSA as wilderness would withdraw it from appropriation under the mining laws and from leasing under the mineral leasing laws. As economic conditions change, the development of The oil and gas, and coal and humate resources in the WSA may become attractive. The inability to do so could impact oil and gas exploration and development, in the long-term.

Impacts to Recreation Off-Road Vehicle (ORV) Use

ORV use includes 2-wheel, 3-wheel, 4-wheel vehicles. None of these vehicles would be allowed within a designated wilderness area, unless by a permit based on the guidelines in the BLM Wilderness Management Policy. This would preclude back-country riding and exploring, vehicle camping, and those who rely heavily on vehicular access in order to hunt. Under the All Wilderness Alternative no vehicular access would be allowed on 7 miles of vehicular ways.

Impacts to Livestock Grazing

Grazing would continue at the approximate levels existing at the time the area would enter the wilderness system. Livestock operations in the Ignacio Chavez WSA would be impacted by limitations imposed under wilderness designation with regard to the maintenance of existing range improvements and the development of two springs. Although grazing is a permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, and the location of new improvements may occur in order to protect wilderness values. Casual use of vehicles for inspection or repair of existing facilities would be precluded. Wilderness designation would hinder the effective use of already limited time to tend to weekend ranching operations.

Overall impact to the livestock operators would not be significant and would consist primarily of inconvenience caused by limited vehicular access and restrictions on range development construction.

AMENDED BOUNDARY ALTERNATIVE (Proposed Action)

Under the Amended Boundary Alternative, 8,780 acres of public land within the Ignacio Chavez WSA would be recommended for wilderness designation

(refer to Map 1). The amended boundary would exclude 1,181 acres of public land because a reassessment of naturalness has found this region substantially impacted by man. If the area within the amended boundary is designated wilderness, existing and potential uses would be managed by the BLM's Wilderness Management Policy (1981).

Impacts to Wilderness Values

If the area within the amended boundary is designated wilderness, all existing and potential uses would be managed under the BLM's Wilderness Management Policy (1981). The reduction in acreage would not impact existing wilderness values, but would enhance the overall management and the naturalness of the WSA by eliminating several retention dams deemed substantially noticeable. Essentially, impacts would be the same as the All Wilderness Alternative. Naturalness would be affected by mineral exploration and development on the 1,181 acres deleted.

Impacts to Oil and Gas, and Coal and Humates Exploration and Development

Impacts to minerals would be the same as stated in the All Wilderness Alternative except for 1,181 acres, which would be available for mineral exploration and development.

Impacts to Recreation ORV Use

Impacts to recreation ORV use would be essentially the same as those stated in the All Wilderness Alternative. ORV activity would continue on the 1,181 acres deleted from wilderness designation.

Impacts to Livestock Grazing

Impacts to livestock grazing would be essentially the same as those stated in the All Wilderness Alternative, except for 3 retention dams which would not require a special wilderness permit for maintenance.

NO WILDERNESS ALTERNATIVE

In the Supplemental Draft Environmental Assessment, the Wilderness Analysis Report for this WSA (Appendix A) included three alternatives: All Wilderness, Amended Boundary, and No Action. Since the Draft's publication in August 1983, a comprehensive land use planning effort was initiated in the Rio Puerco Resource Area. This effort is called a Resource Management Plan (RMP). The Draft Rio Puerco Resource Management Plan (USDI, BLM 1985) currently includes an alternative for special designation for all or part of this WSA. As a result, the scope of the No Action Alternative for this WSA has changed to become the No Wilderness Alternative.

Until Congress makes its decision on wilderness designation, the WSA will be managed under the Final Interim Management Guidelines for Lands Under Wilderness Review (USDI, BLM 1979, amended 1983). If Congress designates it as wilderness, the WSA will be managed under the Wilderness Management Policy (USDI, BLM 1981).

If the area is not designated as wilderness, it will be managed under the No Wilderness Alternative, which would involve management under other than wilderness policy. Management would follow the guidelines of the approved Rio Puerco RMP.

The RMP is expected to be approved in late 1985 while the wilderness study process is still underway. Therefore, the RMP decision concerning this WSA may be incorporated into the Wilderness Study Report to be written later in this process. The Draft RMP proposal for the Ignacio Chavez WSA currently emphasizes management for the scientific, educational values, visual resources, wildlife habitat, and primitive recreation experience.

If the approved RMP does not include special designation for any portion of the Ignacio Chavez WSA, the WSA would be managed under the No Wilderness Alternative according to multiple use concepts without stressing the values listed above. The most probable uses of the area would be continued livestock grazing, mineral exploration and development, and continued ORV use.

Mineral exploration and development would most likely include upgrading of existing vehicular ways, the creation of additional access routes, drilling operations and possibly blasting and surface mining. Because of the rapidly expanding populations of Albuquerque and Santa Fe and the trend noted toward greater and greater recreational ORV use, both legal and illegal, use would reasonably be expected to increase. Upgrading of existing vehicular ways and the creation of additional access routes would likely occur in association with livestock grazing and spring development.

Impacts to Wilderness Values

Anticipated mineral exploration and development, increased ORV activity, and greater use of motorized vehicles would result in disruption of some of the most productive wildlife habitat in northwest New Mexico, the deterioration of visual values, cultural resources, vegetation, as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to significantly impact naturalness.

Existing natural vegetation would inevitably be modified by these actions. This would have a primary impact on the Ignacio Chavez WSA's broad spectrum of habitats supporting a wide variety of wildlife species including mule deer, elk, black bear, golden eagles, red-tailed hawks, and turkey. Existing populations would diminish.

Increased access and thus increased activity and noise levels would disrupt the nesting season for raptors who utilize the WSA's Cerro Parido and Bear's Mouth for nesting. Scaled quail, mourning dove, turkey, and non-game bird species utilize grasses and shrubs along the WSA's canyons and arroyos as well as rolling foothills. Nesting seasons extend from February to August, depending on the species, and the birds are particularly susceptible to increased activity during this time. Not only will habitat be destroyed and nesting activities interrupted, but total nest abandonment is possible.

Increased access would accelerate the number of poaching incidents. Increased activity and habitat damage could be expected to impact critical elk and deer winter range and all game and non-game species. This would ultimately diminish the existing wildlife populations. Overall, the impacts to wildlife under this alternative could be significant because of ecosystem modifications and the increased activity that will likely occur.

Under this alternative, direct impacts to cultural resources from ORV use, although slight, would increase through time as user demand grows. Indirect impacts (the effects not directly caused by vehicles themselves) contribute substantially to loss of cultural resources by providing relative ease of discovery, access, tool and equipment transport, artifact and specimen transport, and speed of action. These indirect impacts would likely increase dramatically under the No Wilderness Alternative.

Primitive and unconfined recreation relies on the resource base of a predominantly natural environment, which would not exist under this alternative. The Ignacio Chavez WSA is one of the areas close to Albuquerque and Santa Fe that provides diversity of primitive recreation opportunity. This WSA has become increasingly popular with the population of these two cities. Several organized group trips by the New Mexico Mountain Club have become annual events. This extremely popular primitive recreation opportunity could be significantly impacted under the No Wilderness Alternative.

The natural setting supporting the special features, including cultural sites, high scenic quality A, critical elk and deer winter range and a wide variety of wildlife species would be subject to increased surface disturbance and vehicular travel. Management under the No Wilderness Alternative would significantly degrade the Ignacio Chavez WSA's potential for use as a "natural laboratory", by degrading the blend of 3 primarily natural ecosystems so accessible to the populations of Albuquerque and Santa Fe.

The natural settings on which Native American uses are often dependent would be subject to increased surface-disturbing activities. The impacts to Native American uses of this WSA are unquantifiable, because of lack of access to proprietary information held by the various pueblos.

Not curtailing additional access and ORV activity would ultimately reduce the high scenic quality A of Ignacio Chavez WSA. ORV activity, both authorized and unauthorized, is expected to accelerate in the Ignacio Chavez WSA. Since additional roads predispose increased surface disturbance and increased cultural modification of the visual resources, a largely expanded road network (particularly those caused by unauthorized use) tends to shift visual resources from high scenic quality A and B, to a lower scenic quality of C and D.

To date no protective designation has been approved for the Ignacio Chavez WSA. The cumulative effort of this lack of protective designation and non-wilderness management practices would be to degrade or eliminate wilderness characteristics of the WSA. Under this alternative, the impacts to wilderness values could be significant over the long term because protective management of the WSA would not be ensured through Congressional designation.

If the Ignacio Chavez WSA were to be designated in the RMP as a Special Management Area, it could still be subject to mineral exploration and development. In addition, the special designation would be administrative in nature, subject to continued review, updating and amending. It would not provide the long-term assurance of maintaining the Ignacio Chavez WSA's wilderness characteristics that Congressional designation would.

APPENDIX 7

LA LENA WSA (NM-010-063A)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The La Lena Wilderness Study Area (WSA; NM-010-063a) contains approximately 10,310 acres of public land, and is located approximately 7 miles north of the village of Guadalupe, New Mexico. It is bordered on the east side by maintained roads and on the south, north, and west by a combination of maintained roads and property boundaries (refer to Maps 1 and 2).

The U.S. Geological Survey Topographic map that covers this WSA is Arroyo Empedrado (7.5 minute quadrangle).

CLIMATE AND TOPOGRAPHY

The La Lena WSA lies at the approximate center of northwestern New Mexico. Physiographically, the WSA is in the Navajo Section of the Colorado Plateau. The Navajo Section is characterized by outcrops of sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Landforms in this region include mesas, cuestras, rock terraces, retreating escarpments, canyons, and arroyos. Approximately 400 feet of relief occurs in the La Lena WSA; from a low elevation of 6,100 feet, the terrain reaches 6,500 feet. The major drainages found in the WSA are Arroyo Empedrado and La Canada de La Lena. The overall geomorphology of the WSA is formed by arroyos cutting sandstone-capped mesas.

The La Lena WSA has a semiarid climate. Warm, relatively dry summers and cold, relatively dry winters are characteristic. The average snowfall in the area is about 37 inches and occurs between October and May. Summer precipitation comes as violent thunderstorms of high intensity but short duration, and results in extremely unpredictable rainfall patterns with certain localized areas receiving moisture while adjacent ones receive none. Annual precipitation ranges between 5 and 15 inches, with an average of approximately 11 inches. About 40 percent of the precipitation falls in July and August.

Temperature, like precipitation, is extremely variable from season to season. Extreme temperatures range from 102° F in the summer to -20° F in the winter. Average daily temperatures in the warm months vary from 45° F in April to 70° F in July.

The average growing season is approximately 160 days, beginning in May and ending in October. The full 160-day season is seldom realized because available moisture, rather than the temperature, is the limiting factor.

MAP 1 LA LENA (NM-010-063A)

Legend

- WSA BOUNDARY
(PROPOSED ACTION: NO WILDERNESS)
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER
REINVENTORY

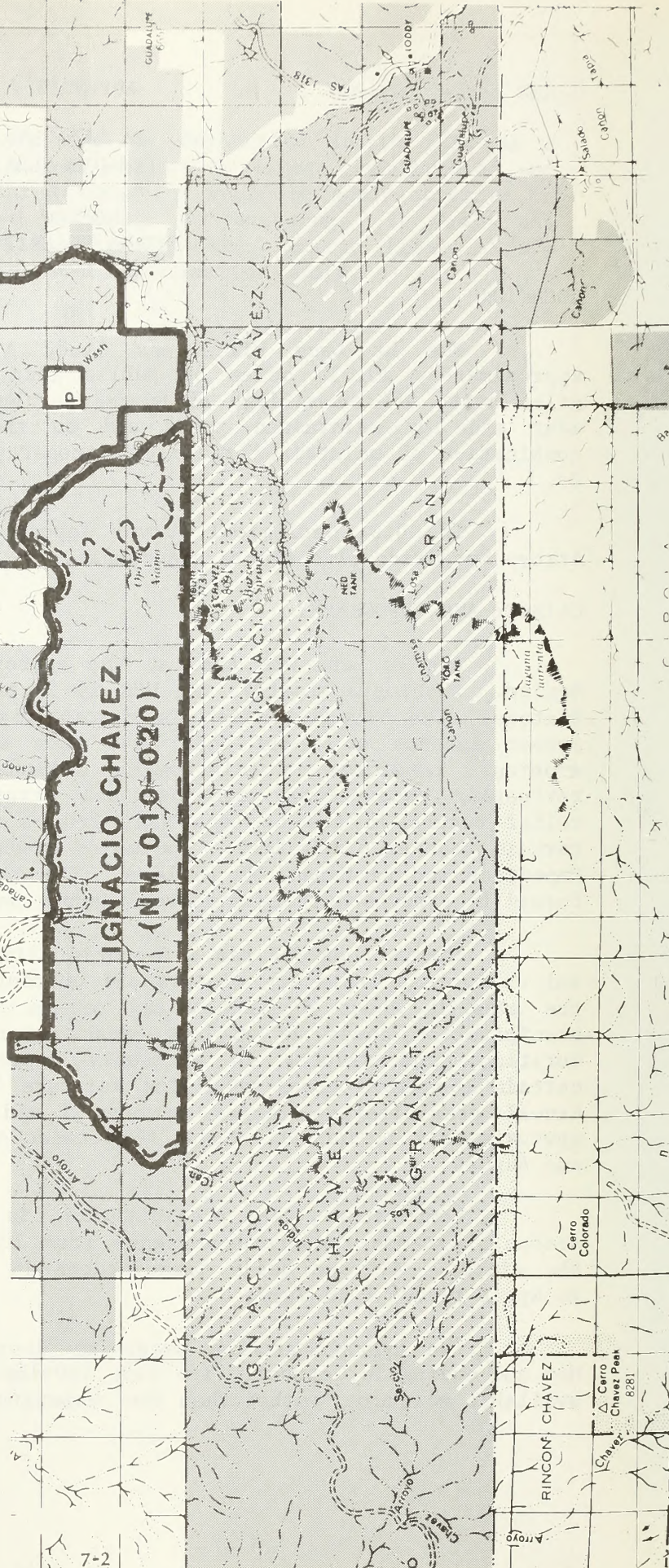
Land Status*

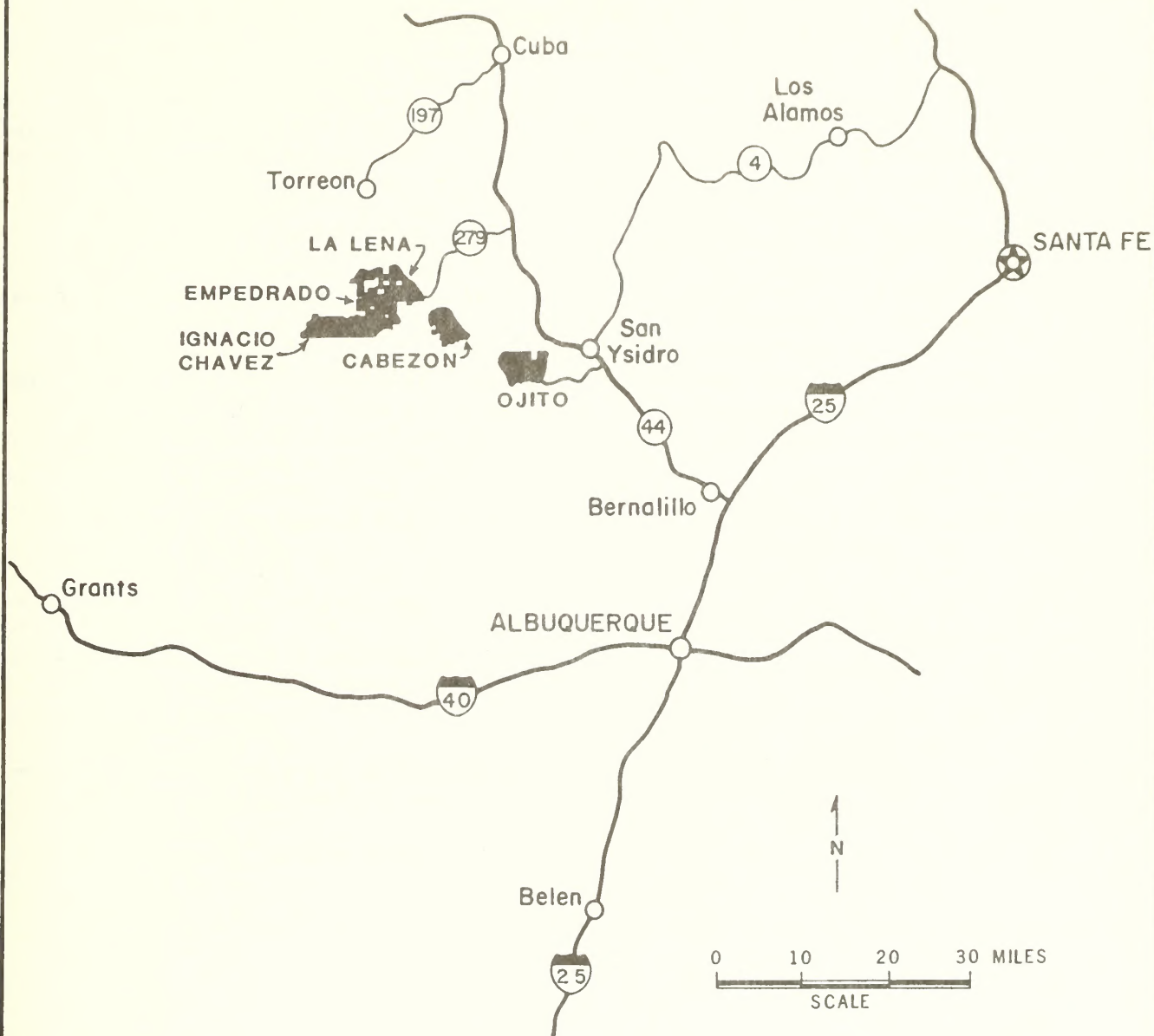
- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982





MAP 2
GENERAL LOCATION

LAND STATUS

The La Lena WSA contains 10,310 acres of public land and approximately 640 acres of State of New Mexico inholdings (refer to Map 1).

ACCESS

Access to the La Lena WSA is from State Highway 44. A state-maintained gravel road leads into the WSA from the west, and county-maintained dirt roads constitute part of the WSA boundary (refer to Maps 1 and 2).

PROPOSED ACTION, ALTERNATIVES AND ISSUES

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

The significant environmental impacts by alternative for each of the environmental issues are summarized in Table 2.

TABLE 1

DESCRIPTION OF THE PROPOSED ACTION
AND ALTERNATIVES

All Wilderness	No Wilderness (Proposed Action)
<ul style="list-style-type: none"> ° Manage 10,310 acres as wilderness. - Exploration and development of 2 pre-FLPMA oil and gas leases would be allowed. - 4,330 acres with moderate potential and 5,980 acres with high potential for oil and gas, and 2,429 acres of moderate potential and 2,462 acres of high potential for coal and humates would be closed for exploration and development. - Close 8 miles of vehicle ways. - Require permits for vehicle access to 3 dirt tanks, and replacement of allotment fences. - Casual vehicle use for inspections and minor repairs would be precluded. - Current grazing levels would continue. 	<ul style="list-style-type: none"> ° Manage 10,310 acres without wilderness protection. - Vehicle use would be allowed to continue. - 10,310 acres would be open to mineral location. - 4,330 acres of moderate potential and 5,980 acres of high potential for oil and gas, and 2,429 acres of moderate potential for coal and humates would be open for exploration and development. - Current grazing levels would continue.

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Major Environmental Issues			
	Wilderness Values	Mineral Exploration	Raptor Habitat	Vehicle Off- Road (ORV) Use
All Wilderness (10,310 acres)	<ul style="list-style-type: none"> -Maintain La Lena's natural character. -Maintain opportunities for solitude. -Throughout the WSA protect erodible soils and vegetation including 3 rare plant species. -Maintain current scenic quality B. -Maintain current undisturbed condition of abundant cultural sites. -Maintain current wildlife habitat supporting golden eagles, great horned owls, prairie falcons, red-tailed hawks, kestrels, mule deer and gray fox. 	<ul style="list-style-type: none"> -Eliminate mineral exploration and development of moderate and high potential oil and gas, and coal and humates. -Allow development of 2 pre-FLPMA oil and gas leases. 	<ul style="list-style-type: none"> -Maintain one of the most important raptor nesting areas within north-west New Mexico. 	<ul style="list-style-type: none"> -8 Miles of vehicular ways would be closed for recreation use, including 2-wheel, 3-wheel and 4-wheel vehicles. This will impact back-country exploration, vehicular camping and some hunting.
No Wilderness (10,310) (Proposed Action)	<ul style="list-style-type: none"> -Reduce La Lena's natural character. -Reduce opportunities for solitude. -Threaten fragile soils and vegetation. -Degrade scenic quality. -Disturb nesting sites for raptors and other species; possibly to the point of nest abandonment. -Destroy habitat for golden eagles, great horned owls, prairie falcons, red-tailed hawks, kestrels, mule deer, and gray fox, diminishing existing populations. -Degradation of abundant cultural resources. 	No Impact.	<ul style="list-style-type: none"> -Disturb one of most important raptor nesting areas within northwest New Mexico. -Could cause nest abandonment. 	No Impact.

SECTION 2

EXISTING RESOURCES

GEOLOGY

The La Lena WSA lies in an area of relatively simple structure, with few faults and only gentle folding (associated with the termination of the McCarty's Syncline). Regional dip is at a low angle to the northwest towards the San Juan Basin. The La Lena WSA is situated on the southwest margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dip, volcanic and sedimentary rocks crop out in many small cliffs and spectacular escarpments.

ENERGY AND MINERALS

The scenic character found in much of the La Lena WSA is the result of gently dipping sandstone beds of the Menefee Formation that form a cuesta-and-valley landscape. The outcropping Menefee rocks represent the uppermost layers of a sedimentary sequence that ranges in age from Pennsylvanian to Cretaceous (refer to Figure 1). Regionally, this sequence is known to contain deposits of oil and gas, coal and humates, and uranium.

PALEONTOLOGY

The sedimentary rocks that crop out in the WSA are known regionally to contain a varied fossil assemblage. Of the three exposed rock units, the massive Point Lookout Sandstone contains only trace fossils and plant fragments. The remaining exposed units, the Menefee Formation and Mancos Shale, contain a wide range of fossiliferous material. Occurring in the Menefee are plant fragments and vertebrate material, while the Mancos exhibits animal life in the form of molluscs.

WATER

Surface Water

The La Lena WSA lies in a tributary watershed of the Rio Puerco, which ultimately flows into the Rio Grande. The WSA considered part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral and commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout a given year, but volumes vary enormously depending on season. Peaks commonly occur during the summer and early autumn months, which coincide with the rainy season; up to 99 percent of the annual discharge recorded at the gage may occur during this period (Craig 1980).

FIGURE 1
STRATIGRAPHIC SECTION,
CABEZON, EMPEDRADO, IGNACIO CHAVEZ,
LA LENA, AND OJITO WILDERNESS STUDY AREAS

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER	LITHOLOGY
CENOZOIC	QUATERNARY		PEDIMENT	
	TERTIARY		SANTA FE	
	CRETACEOUS		PICTURED CLIFFS	
			LEWIS	
			CLIFF HOUSE	
			MENEFEE	
			POINT LOOKOUT	
		MESAVERDE	CREVASSE CANYON	
			GALLUP	
			MANCOS	
			DAKOTA	
			BRUSHY BASIN	
	JURASSIC	MORRISON FORMATION	WESTWATER CANYON	
			RECAPTURE	
			BLUFF	
		SAN RAFAEL	SUMMERVILLE	
			TODILTO	
			ENTRADA	
MESOZOIC	TRIASSIC	CHINLE FORMATION	UNNAMED SILTSTONE	
			PETRIFIED FOREST	
			POLEO SANDSTONE LENTIL	
			SALITRAL SHALE TONGUE	
			AGUA ZARCA	
PALEOZOIC	PERMIAN		SAN ANDRES	
			GLORIETA	
			YESO	
	PENNSYLVANIAN	MAGDA-LENA	ABO	
			MADERA	
			SANDIA	
CAM-BRIAN	MISSISSIPPIAN		ARROYO PENASCO	
	PRECAMBRIAN		PRECAMBRIAN	

Ground Water

The La Lena WSA lies within the state-declared Rio Grande Underground Water Basin. One undeveloped spring is known to be located in the WSA.

SOILS

The soils in the La Lena WSA are highly susceptible to erosion, and opportunities for management or conservation are extremely limited. Generally, they have heavier (more clayey) soil textures, saline and/or alkali conditions that inhibit plant growth, and exhibit high susceptibility to water erosion and piping. Numerous gullies that have almost vertical walls are common. The sediment yield from the WSA as a whole is high.

VEGETATION

Table 3 summarizes the vegetation found in the La Lena WSA by range site. Map 3 shows the location of these range sites within the WSA.

Rare Plant Species

Potential habitats for Abronia bigelovii (Bigelow verbenawildflower), Pediocactus papyracanthus (blue grama cactus) and Astragalus kentrophyta var. neomexicana (New Mexico kentrophyta-wildflower) exist in this WSA (Knight 1982).

WILDLIFE

San Luis Mesa, in the southern portion of the La Lena WSA, is ideal raptor (bird of prey) nesting habitat. Several golden eagle nests and great-horned owl nests occur within the WSA (USDI, BLM 1981). Other raptors observed nesting on San Luis Mesa outside of the WSA include prairie falcons, red-tailed hawks (within a mile of the WSA), and kestrels.

A small population of mule deer reside in the WSA, although their habitat is marginal. Other wildlife observed in the WSA include coyote, gray fox, blacktailed jackrabbit, Gunnison's prairie dog, and scaled quail. A complete listing of species inhabiting the WSA can be found in the Run Wild computer printout (USDA, FS 1982) for Sandoval County, on file in the Rio Puerco Resource Area.

VISUAL RESOURCES

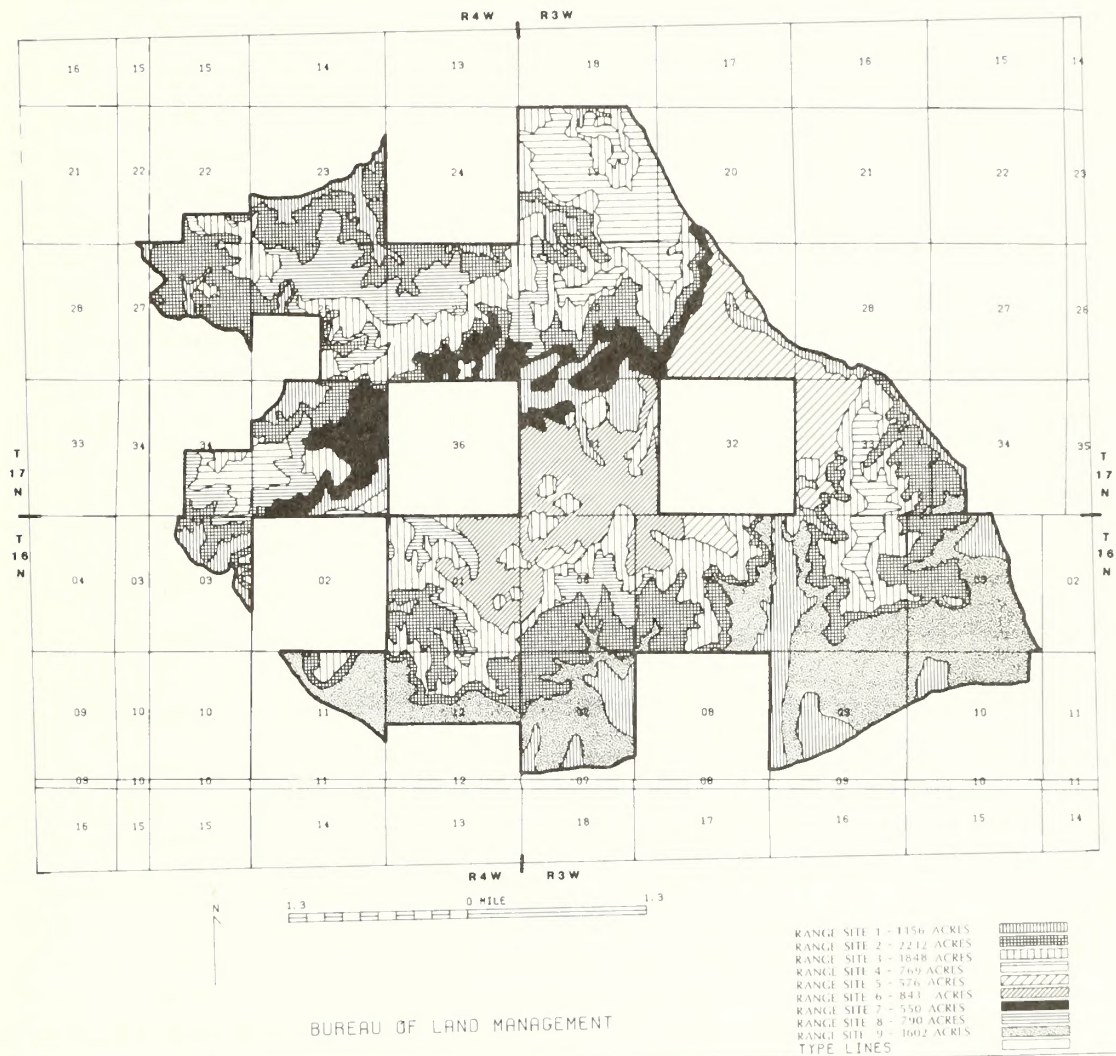
Scenic views of Cabezon Peak are visible from within the La Lena WSA. Also visible is an expansive rolling valley cut by washes and arroyos, and evidence of past volcanic activity that includes Mesa Chivato and the volcanic plugs surrounding it.

Based on BLM's most current inventory the La Lena WSA has been found to contain good scenic quality B visual resources.

TABLE 3
VEGETATION, LA LENA WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Garrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grama-galleta steppe	Less than 1	N, S, E, W	21	9.28	Good	Alkali sacaton, fourwing saltbush, black greasewood	25-30	900	Alkali sacaton, giant sacaton, blue grama, vine mesquite, galleta grass	Christ-ianburg Clay on Gullied land, Las Lucas-Persayo and Rarola Silty Clay Loam, Alkali
2	Juniper-pinyon woodland	36	N, S, W	11	29.43	Poor	Alkali sacaton, shadscale, galleta grass	10	475	Alkali sacaton, sideoats grama, Indian ricegrass, Bigelow sage, galleta grass	Oil-Travel-silla-Shingle, Eroded-Rock Outcrop Complex
3	Juniper-pinyon woodland	3	N, S, W	27	8.68	Poor-fair	One-seed juniper, big sagebrush, blue grama	15	450	Alkali sacaton, blue grama, Indian ricegrass, little blue-stem, one-seed juniper	Rock Outcrop-silla-Persayo Association
4	Great Basin sagebrush	1	N or nearly flat	20	10.27	Poor	Galleta grass, big sagebrush, blue grama	20	60-80	Indian ricegrass, bottlebrush squirrel-tail, antelope bitterbrush, big sagebrush	Oil-Travel-silla-Shingle Outcrop Complex
5	Grama-galleta steppe	2	S and nearly flat	18	13.03	Poor-good	Broom snake-weed, galleta grass, blue grama	30	650	Western wheatgrass, big sagebrush, galleta grass, mutton blue-grass, blue grama	Shavano-Berent Association
6	Grama-galleta steppe	4	W	16	13.00	Fair	Galleta grass, red threeawn, broom snakeweed	23	600	Blue grama, Indian ricegrass, spike dropseed, sand dropseed	Shavano-Berent Association
7	Grama-galleta steppe	4	S, W	10	4.70	Poor-fair	Alkali sacaton, galleta grass, broom snakeweed	20	440	Black grama, blue grama, Indian ricegrass	Penistaja Bond Association
8	Juniper-pinyon woodland	2	E, S	26	9.18	poor	One-seed juniper, galleta grass, blue grama	15	550	Black grama, little blue-stem, Indian ricegrass, needle and thread grass	Rock Outcrop-Travel-silla Complex
9	Juniper-pinyon woodland	3	S	20	7.97	fair	Galleta grass, broom snake-weed, alkali sacaton	30	800	Western wheatgrass, alkali sacaton, bottlebrush squirreltail, galleta grass	Las Lucas Soil

MAP 3 **VEGETATION, LA LENA WSA**



CULTURAL RESOURCES

Cultural resource inventory within the La Lena WSA consists of reconnaissance of one section (640 acres) and several small (5-acre or less) in-house surveys in support of various BLM projects. Five sites were located by Eastern New Mexico University in 1976. Three of the sites are clearly Navajo (two sweat lodges and a livestock corral), and the remaining two are lithic scatters of indeterminate cultural affiliation.

A minimum of 150 sites can be projected within the boundaries of this WSA, though actual site density may exceed this estimate. High site densities (particularly Navajo) are recorded on Torreon Wash immediately north of the WSA boundary, and probably continue into the northern periphery of the La Lena WSA. Some evidence of use by Archaic, Prehistoric Pueblo, Pueblo and contemporary peoples exists within this WSA (refer to Table 4).

TABLE 4

ARCHAEOLOGICAL SEQUENCE FOR THE RIO PUERCO RESOURCE AREA
(After Dittert, 1959)

Cultural Type	Time	Cultural Period	Time
PaleoIndian	Before 250 B.C.	Pueblo II	870-950 A.D.
Archaic	Before 250 B.C.	Pueblo II	950-1100 A.D.
	700 B.C. (500-700 BMIII)	Pueblo III	1100-1200 A.D.
Basketmaker	700 A.D.	Pueblo III-IV	1200-1400 A.D.
	800 A.D.	Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

AIR QUALITY

Under the Clean Air Act (as amended, 1977), BLM-administered lands have been given a Class II air quality classification. This class allows moderate deterioration associated with moderate, well-controlled industrial and population growth.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable, or salable minerals is occurring within the boundaries of the La Lena WSA. As of January 1984, a total of 199 pre-FLPMA mining claims and 17 post-FLPMA mining claims have been staked within the WSA, and 13 oil and gas leases issued (refer to Map 4). No mines or wells exist within the WSA boundaries, and the level of exploration activity has been low.

Table 5 indicates that the highest potential for development is associated with the coal and humates that occur in the Mesaverde Group and for oil and gas associated with the sedimentary rocks of Jurassic and Cretaceous age. The geologic environment, inferred geologic processes, reported mineral occurrences, and known mines or deposits indicate a high favorability for the accumulation of these mineral resources (refer to Maps 5 and 6). The completion of a successful exploration program could lead to the development of a moderate-sized surface coal mine in the northern half of the La Lena WSA.

WATERSHED

The La Lena WSA lies in part of the Rio Puerco watershed. The Rio Puerco is one of the major tributaries of the Rio Grande, embracing approximately one-third of the drainage that lies in New Mexico above the Elephant Butte Reservoir. The Rio Puerco supplies one-sixteenth (6 percent) of the waters of the Rio Grande, yet it is the source of over half (56 percent) of the sediment that obstructs the main Rio Grande channel (Waite 1972).

The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by sheep and cattle overgrazing in the late 1800's and early 1900's. This use has resulted in extensive sheet, rill, and gully erosion in all areas except the steep slopes of mesas. The WSA is especially vulnerable to upland erosion because of sparse vegetation, relatively steep slopes, and the occurrence of violent thunderstorms. During a six-year study, Leopold (1966) found that upland sheet erosion was the most significant source of sediment in a semiarid area of New Mexico.

The Arroyo Empedrado (Rock Basin) watershed is presently being intensively monitored. Gages now measure rainfall runoff and sediment from each event. Vegetation studies include utilization by livestock, range condition, trend, and production as part of a research project done in conjunction with the U.S. Forest Service, Rocky Mountain Forest and Range Experimental Station. This project is designed to monitor and document quantitative change in runoff and sediment discharge from rangelands subject to intensive grazing. The results of this monitoring will be used for predicting hydrologic response to grazing management in future BLM planning and environmental studies.

MAP 4 LA LENA WSAMINING CLAIMS AND MINERAL LEASES

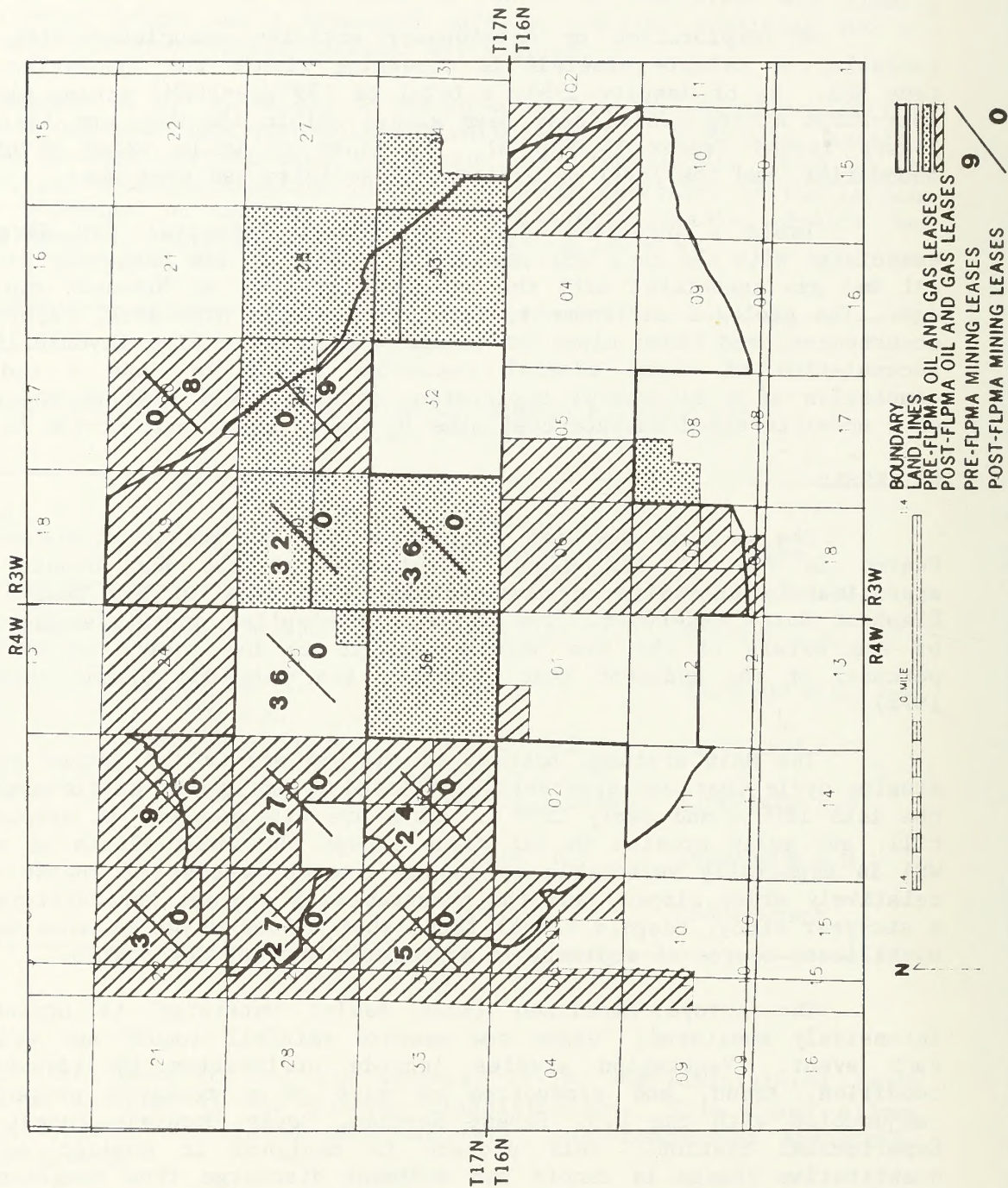


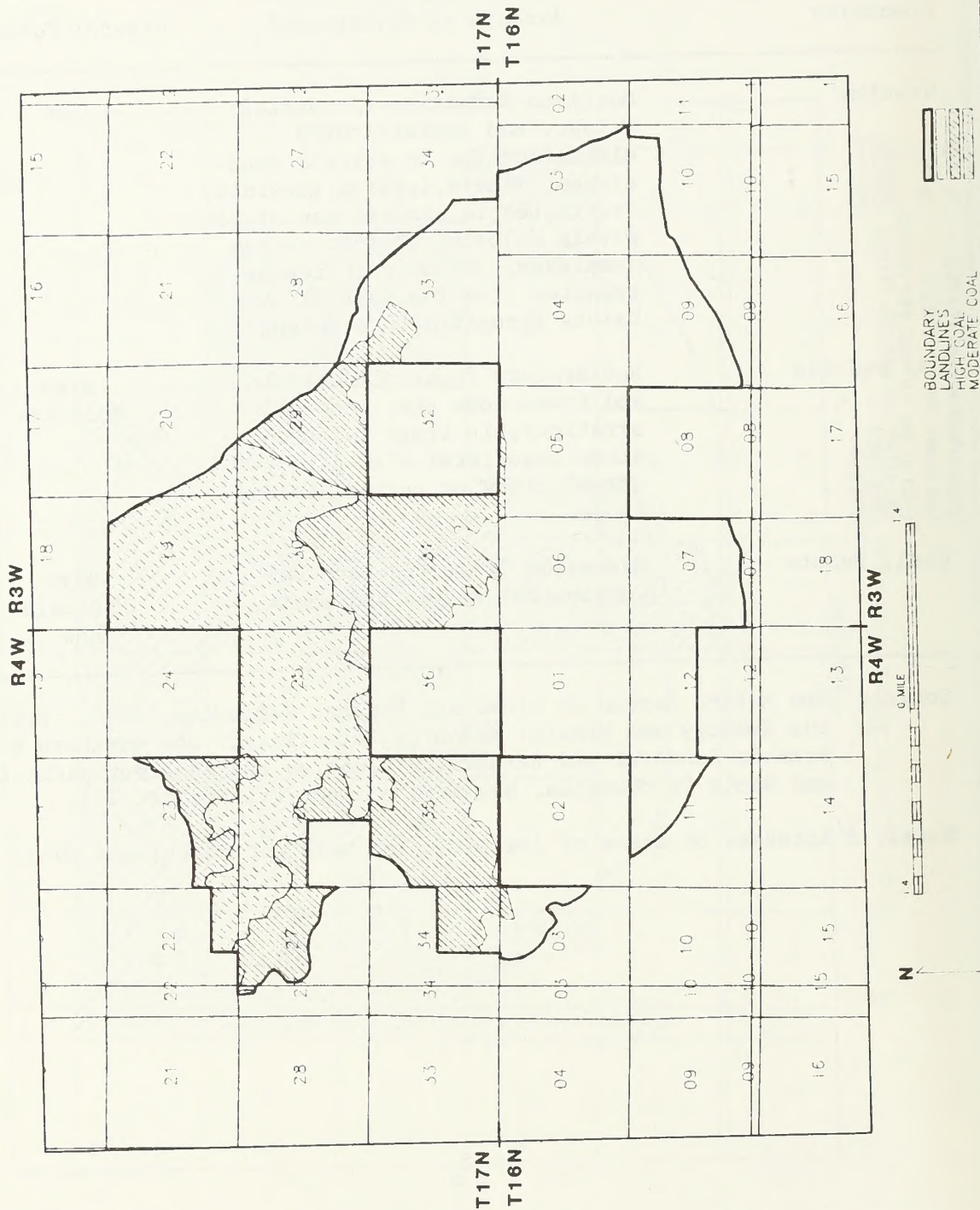
TABLE 5
MINERAL POTENTIAL
LA LENA WSA

Commodity	Associated Environment	Mineral Potential	Acreage
Uranium	Morrison Formation (Jurassic); Primary and redistributed mineralization in arkosic sand- stones; mineralization generally restricted to channel sandstones within deltaic, braided-stream complexes. Minor occurrences reported from the base of the Dakota Formation (Cretaceous).	Low	NC ^{a/}
Oil and Gas	Sedimentary rocks of Jurassic and Cretaceous age; generally stratigraphic traps in sand- stone associated with paleo- strand lines or buried aeolian dunes.	High	5,980
		Moderate	4,330
Coal, Humate	Mesaverde Group (Cretaceous) Continental margin sediments	High	2,462
		Moderate	2,429
		Low	NC ^{a/}

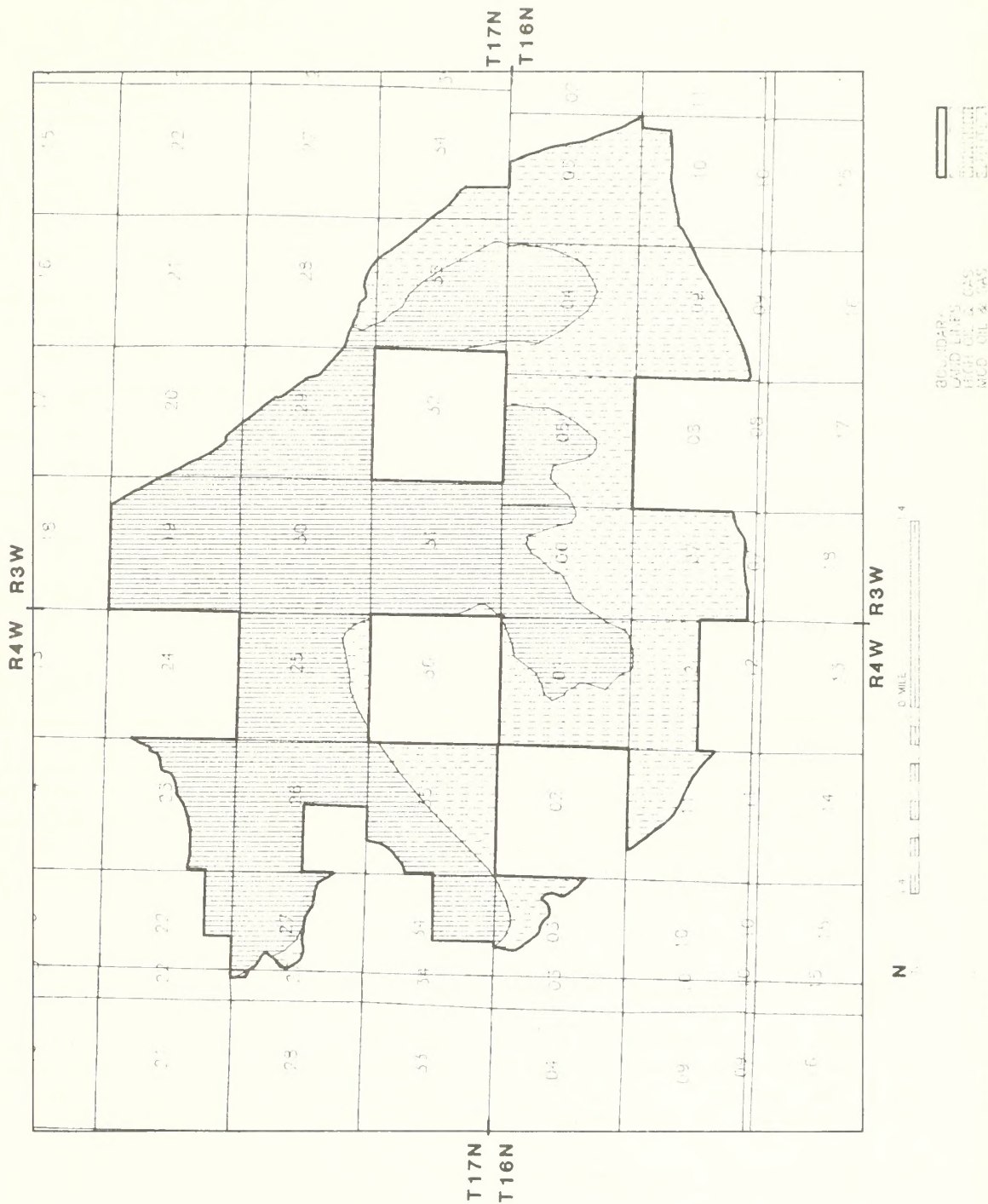
Source: New Mexico Bureau of Mines and Mineral Resources, 1984. Preliminary Report on the Geology and Mineral Resource Potential of the northern Rio Puerco Resource Area in Sandoval and Bernalillo Counties and Adjacent parts of McKinley, Cibola and Santa Fe counties, New Mexico Open File Report 211.

Note: ^{a/} Acreages on areas of low potential were not calculated (NC).

MAP 5 LA LENA WSAPOTENTIAL COAL



MAP 6 LA LENA WSAPOTENTIAL OIL & GAS



LIVESTOCK GRAZING

Five grazing allotments contain acreage within the boundaries of the La Lena WSA (refer to Map 7). Of these five allotments, three have acreage in the adjoining Empedrado WSA. The La Lena WSA supports approximately 1,410 Animal Unit Months. Table 6 displays grazing information pertaining to these five allotments.

TABLE 6
RANGE ALLOTMENT INFORMATION

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Torreon Wash	0035	7,976	1,396	1	88 head	Yearlong
Arroyo Empedrado	0036	4,536	1,042	2	59 head	Yearlong
Cerro Cuate	0041	3,886	1,701	1	58 head	Yearlong
Brandy (San Luis Place)	0010	12,604	2,755	1	188 head	8 months
Twin Butte	0034	12,588	3,416	2	121 head	Yearlong

Most of the operators who graze livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. They live in the vicinity of Cuba and Albuquerque, near their primary source of income. Therefore, they can attend to their grazing allotments only on weekends, and the pickup truck has become increasingly important as a livestock management tool.

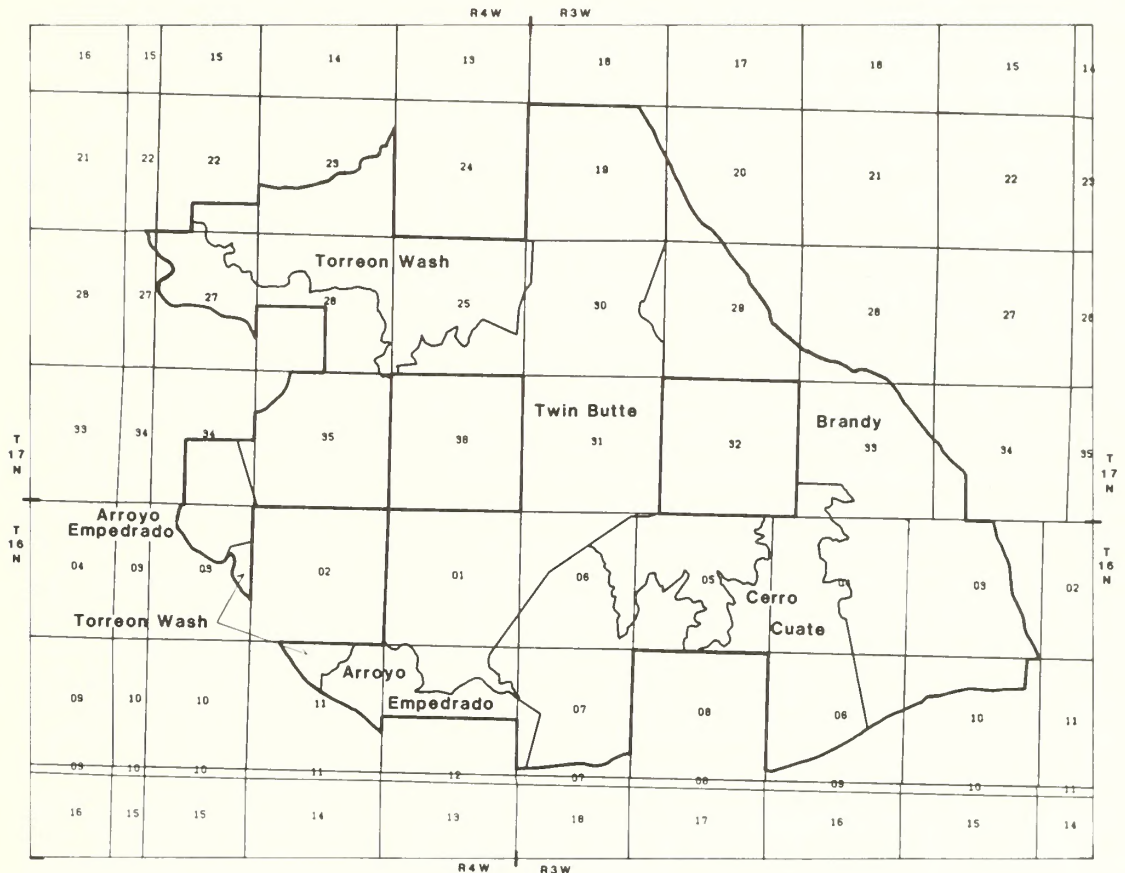
Torreon Wash Allotment (#0035)

Of this allotment's five pastures, one pasture has acreage within the La Lena WSA. Livestock graze within the WSA for approximately 5 months of the yearlong season. No new range improvements are planned for construction within the WSA to implement the Allotment Management Plan (AMP).

Arroyo Empedrado Allotment (#0036)

Of the three pastures that make up this allotment, two have acreage within this WSA. No new range improvements are proposed for construction within the La Lena WSA to implement the AMP.

MAP 7 **RANGE ALLOTMENTS, LA LENA WSA**



1.3 0 MILE 1.3

ALLOTMENTS
 SECTIONS
 NM-010-063A



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Cerro Cuate Allotment (#0041), Brandy Allotment (San Luis Place - #0010), and Twin Butte Allotment (#0034)

All the range improvements needed to implement the AMP on these three allotments have been constructed. No additional improvements are proposed.

FOREST PRODUCTS

No potential exists for commercial or domestic fuelwood use. Limited fuelwood trespass has been reported.

RECREATION

The BLM has no visitor use data for the La Lena WSA. The primary recreation use is believed to be some big game hunting and its associated activities -- camping, ORV use, and hiking. Possible activities not directly associated with hunting include rock-hounding, horseback riding, and photography. Letters received by the BLM show that scenic and geological sightseeing also occurs.

In the Proposed Rio Puerco Livestock Grazing Management System ES (1978), the BLM utilized the Recreation Information System (RIS) to describe the existing recreation environment. The RIS is an evaluation that rates the quality of experience a visitor can expect while participating in a specific activity. The La Lena WSA lies within the Chico Arroyo RIS unit. Table 7 describes the key factors used to evaluate each activity and the activity's quality rating. The most recent recreation inventory (Recreation Opportunity Spectrum) categorizes the WSA as predominately semi-primitive motorized.

TABLE 7

RECREATION QUALITY EVALUATION

Activity	Quality Rating in Chico Arroyo RIS Unit	Key Factors
ORV use	High	Soil, size, hazards, usability
Sightseeing (Scenery)	Medium	Landform, color, water, vegetation, uniqueness, intrusions
Primitive Values	Low	Scenic qualities, size, intrusions, wildlife, fisheries, water usability, uniqueness

EDUCATION/RESEARCH

The Arroyo Empedrado watershed is presently being intensively monitored for runoff, sediment, and vegetation production in order to improve grazing management practices. Educational-interpretive potential exists in the Empedrado WSA in the form of a "natural laboratory" for the observation and study of natural systems.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia, and Santa Ana peoples) have traditionally used the area for firewood gathering and hunting. A recent survey near the WSA and interviews with officials of the Jemez, Zia, and Santa Ana Pueblos, and the Canyoncito Navajo Reservation generally show that many places of religious significance exist in and near the La Lena WSA. Specific site locations are not known to the lay members of the tribes, because only tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional Native American uses within the boundaries of this WSA will probably continue.

WILDLIFE

Adequate nesting habitat exists in the La Lena WSA to support greater numbers of a wide variety of raptor species. San Luis Mesa is considered to be one of the most important nesting areas within northwest New Mexico for at least six species of raptors (birds of prey) (USDI, BLM 1981). A BLM survey in April 1980 located 15 nest sites including one active golden eagle nest, one active prairie falcon nest, one active great-horned owl nest, and one active red-tailed hawk nest.

A larger prey base is needed, however, before raptors will be attracted to the WSA. This could occur in the future when rodent populations reach a higher level and as range conditions improve as a result of changes in grazing management.

The resident deer herd is probably at its maximum capacity because deer habitat conditions are marginal. Small game (rabbit/quail) numbers would probably increase with improvement in range conditions. Three wildlife watering devices with protective enclosure fences are present in the WSA. One waterfowl development is proposed within the La Lena WSA in a BLM Habitat Management Plan.

Human use of the wildlife resource in the WSA generally includes small game hunting, trapping, and incidental observation. Control of coyotes preying on livestock has occurred in the past and will probably be requested by livestock operators in the future.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work in the La Lena WSA is documented in the Wilderness Intensive Inventory (USDI, BLM 1980). These imprints include a fenceline network, three earthen dams, three drill pads, and nine two-track ways and one water pipeline. The BLM considers the overall effects of these imprints upon the entire WSA when assessing naturalness, which is a function of the size of the unit and the number and distribution of impacts.

The drill pads are in the process of natural revegetation, and the retention dams blend well with the existing environment because they have begun to silt in and revegetate. The two-track ways are maintained solely by vehicular travel and would return to a natural condition if use were discontinued. Several routes identified during the wilderness intensive inventory are no longer visible.

The WSA as a whole appears to have been affected primarily by the forces of nature, and is considered to exhibit the wilderness characteristic of naturalness.

Solitude

The BLM defines solitude as the state of being alone, removed from habitation, or isolated. In the La Lena WSA, the feeling of being isolated from others is enhanced by the steep-sided San Luis Mesa and numerous arroyos (refer to Figure 2). These features allow visitors to be screened from one another and avoid evidence of others. Although the opportunity to experience solitude exists within the La Lena WSA, it cannot be properly described as outstanding.

Opportunities for Primitive and Unconfined Recreation

The BLM views primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities or an activity of outstanding quality. The quality of these opportunities on the La Lena WSA are considered to be marginal.

Special Features

The San Luis Mesa raptor habitat is the predominant special feature located in the La Lena WSA (refer to Figures 3 and 4). Some cultural resource sites also have been noted.



Figure 2 - Across Arroyo Chico from the Empedrado WSA stands the steep-sided, sandstone-capped San Luis Mesa of the La Lena WSA.



Figure 3 - The predominantly natural character of the La Lena WSA provides superb raptor habitat supporting a wide variety of raptor species (birds of prey).



Figure 4 - Pinyon-juniper-topped San Luis mesa rests above the sloping flatlands of the La Lena WSA. The mesa is being recommended for special designation in the Rio Puerco Draft Resource Management Plan (RMP) because of its fine raptor habitat.

Multiple Resource Benefits

The La Lena WSA contains some natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM.

Diversity In The National Wilderness Preservation System

Ecotypes Present

The La Lena WSA, according to Robert G. Bailey (USDA, FS 1980), falls under the Dry Domain in the Highland Province, and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into two sections: Juniper-Pinyon Woodland and Sagebrush-Saltbush Mosaic, and Grama-Galleta Steppe and Juniper-Pinyon Mosaic.

The three A.W. Kuchler types (1964) found in the WSA are described as follows.

Grama-Galleta Steppe. Total acres in the WSA are approximately 3,469 (34 percent of the WSA).

Juniper-Pinyon Woodland. Total acres in the WSA are approximately 5,961 (58 percent of the WSA).

Great Basin Sagebrush. Total acres in the WSA are approximately 880 (8 percent of the WSA).

Map 8 displays these ecotypes. Vegetation Map 3 (Section 2) breaks each ecotypes into more refined range site categories described in Table 3 (Section 2 of this appendix).

Distance from Major Population Centers

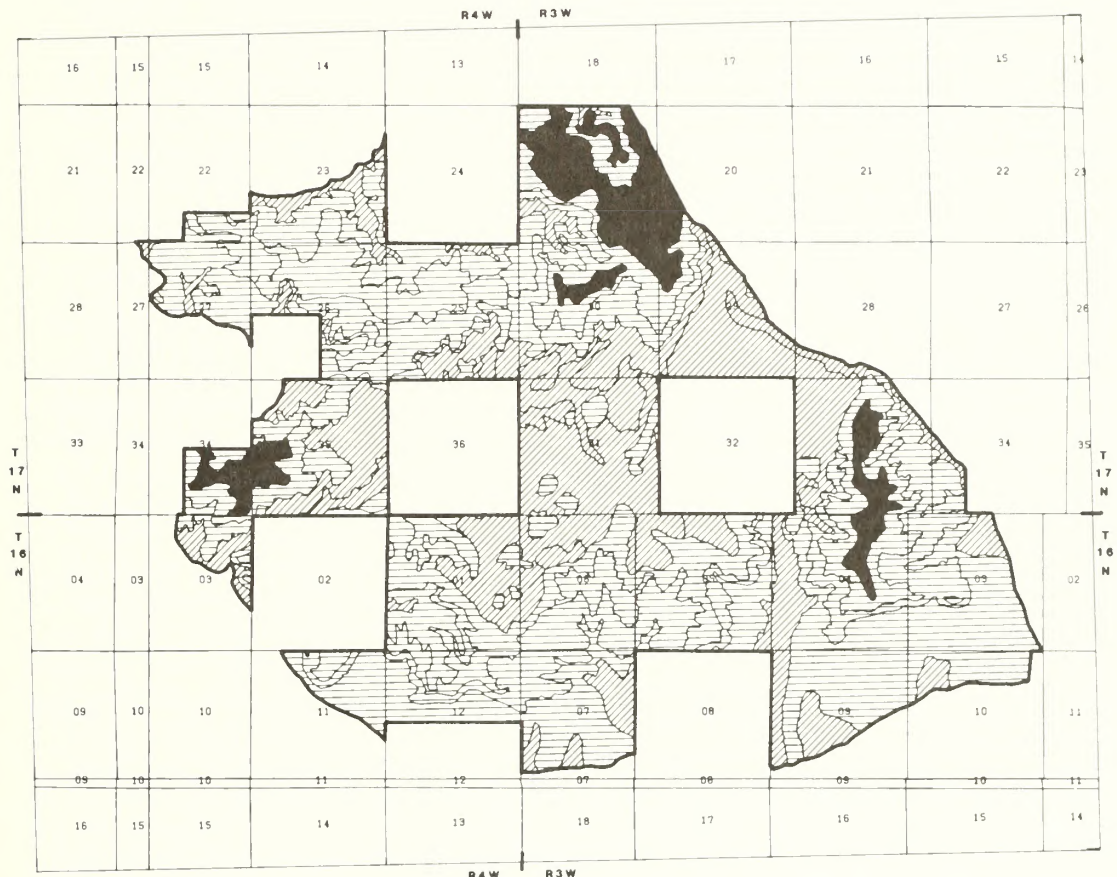
The La Lena WSA is within a day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census (USDI, BC 1981) as a Standard Metropolitan Statistical Area.

MANAGEABILITY

To be recommended as suitable, the La Lena WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, state lands, valid existing rights, mineral leases, rights-of-way, topography, and the overall pattern of land status.

Reasonable access must be guaranteed to State of New Mexico inholdings. Based on present use, these access needs would result in the

MAP 8 ECOTYPES, LA LENA WSA



PINE-DOUGLAS FIR
JUNIPER-PINYON WOODLAND
GRAMA-GALLETA STEPPE
TUPELINES
SECTIONS
NM-010-063A

BUREAU OF LAND MANAGEMENT

occurrence of generally low levels of use incompatible with wilderness designation. The State of New Mexico has expressed interest in exchanging their lands for public domain elsewhere.

The La Lena WSA contains 199 pre-FLPMA mining claims and 13 oil and gas leases, of which two are pre-FLPMA. Coal and humates as well as oil and gas have been assessed as having moderate and high potential within the La Lena WSA. Because of these assessments and the pre-FLPMA rights, it is reasonable to assume exploration would occur. Exercise of pre-FLPMA rights could significantly impact the La Lena WSA's ability to be effectively managed as wilderness.

The basic land configuration of the La Lena WSA would make it difficult to manage over an extended time period. Private and state parcels intrude into the main land mass of the WSA to the north, west and east. Two state sections in the center of the WSA further break up its contiguous acreage (refer to Map 1).

SECTION 5

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after public input obtained by large mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory and are continuing during the preparation of the statewide wilderness EIS.

During the wilderness inventory, proponents of WSA status for the La Lena area emphasized its natural character, and opportunities for solitude and primitive and unconfined recreation as reasons it should ultimately be designated wilderness.

Opponents of WSA status highlighted problems with the land ownership configuration, as well as the presence of human impacts and possible limitations on ranch operations.

During the public comment period on the Albuquerque District Wilderness Draft Environmental Assessment (USDI, BLM 1983), 30 public inputs were received on the La Lena WSA. Thirteen of these inputs expressed opposition to wilderness designation, citing lack of naturalness and the potential for oil and gas. One input cited high favorability for coal, and moderate favorability for uranium, thorium, gypsum, oil and gas, and clay.

Seventeen inputs favored wilderness designation, stating the La Lena WSA contains excellent wilderness characteristics and would be even better managed for wilderness by being combined with the Empedrado WSA. Some individuals also felt that an Area of Critical Environmental Concern designation would not guarantee the permanent protection for the WSA's values that wilderness designation would provide. Some expressed the opinion that the La Lena WSA's land configuration was a poor argument for dropping the WSA from consideration, and that the current land pattern is not a limiting factor to effective management.

Several comments also questioned how effectively the San Luis Mesa raptor area can be protected without wilderness designation. One comment pointed out inconsistencies between Maps 3, 5 and the text of the Draft EA; these inconsistencies were corrected in the Final EA.

SUMMARY OF SCOPING

Table 8 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental Assessments. Unless otherwise shown in the table, issues related to forest products, air quality, recreation, watershed, vegetation, visual resources, cultural resources, wildlife, Native American uses, education/research were also considered in the District Final EA's and because little or no environmental impact were identified, issues relating to those resources are not analyzed in this WAR.

TABLE 8

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
Expand the WSA	This was not considered further because it would require consideration of lands not nominated for wilderness study and lands not protected by interim management.
Combine La Lena WSA and Ignacio Chavez WSA	This was not considered a manageable alternative.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impact was identified to livestock grazing, however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

Four issues of concern were identified for the La Lena WSA. These include uranium, oil and gas, and coal and humate mineral potential, recreation off-road vehicle use, raptor habitat and wilderness values.

La Lena WSA contains moderate potential for oil and gas exploration on 4,401 acres, and high potential on 6,030 acres. It also contains 2,429 acres of moderate potential coal and humates and 2,462 acres of high potential. Concerns regarding mineral potential include restrictions to mineral exploration and development under wilderness designation, as well as the potential impacts to the naturalness of the La Lena WSA resulting from mineral exploration and development if it is not designated wilderness.

Concerns were raised regarding the elimination of recreation off-road vehicle use under wilderness designation as well as the potential impacts to the naturalness of the La Lena WSA resulting for increased recreation off-road vehicle use.

Concerns were raised regarding impacts to some of the best raptor nesting areas within northwest New Mexico, which could result from increased human activity that would likely occur if the La Lena WSA is not designated wilderness. Impacts could result in nest abandonment.

Analysis of the wilderness values issue is required by the BLM Wilderness Study Policy. The La Lena WSA contains a variety of special features including abundant cultural resource sites, 3 rare plant species and wildlife habitat supporting golden eagles, great horned owls, prairie falcons, red-tailed hawks, kestrels, mule deer and gray fox.

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses two alternatives for the La Lena WSA: the All Wilderness Alternative and the No Wilderness Alternative (manage under the existing land use plan). The BLM has also considered other alternatives for this WSA which were not found to be reasonable or beneficial; therefore, these alternatives were dropped.

ALL WILDERNESS ALTERNATIVE

Under this alternative, the entire 10,310 acres of public land within the La Lena WSA would be recommended as suitable for wilderness designation. If the WSA is designated as wilderness, existing and potential uses would be regulated by the Wilderness Management Policy (USDI, BLM 1981).

Impacts to Wilderness Values

On any acreage designated as wilderness, the existing and potential uses would be regulated by the BLM's Wilderness Management Policy (1981). Wilderness values would be retained and protected over the long-term by management under this policy. The La Lena WSA's existing natural character and the opportunities for solitude would be maintained, as well as its special values.

Restricting surface disturbing and mechanized activities associated with ORV use, and mineral exploration and development would prevent increased access and provide long-term protection for a wide variety of existing natural resources. Restricting road building prevents the cultural modifications to naturalness which inevitably accompany increased access including such activities as trash dumping, removal of natural vegetation, the creation of temporary campsites, woodcutting and poaching. Those resources which would be maintained by restricting these activities include: 1. easily eroded soils and vegetation, including three rare plant species; 2. current low levels of noise and human activity which protects existing raptor nest sites, scale-quail and non-game species nest sites; 3. current wildlife habitat for both non-game and game species; 4. current visual resources managed as VRM class II; 5. currently undisturbed cultural resources; 6. current "natural laboratory" setting.

Wilderness designation would also maintain through long-term protection, the natural setting upon which Native American uses are often based.

Under the All Wilderness Alternative, the long-term protection of Congressional designation would significantly benefit the wilderness resources in the La Lena WSA.

Impacts to Oil and Gas, and Coal and Humate Exploration and Development

The La Lena WSA exhibits a mixture of moderate and high favorability for both oil and gas, and coal and humates. Out of 13 oil and gas leases, 2 are pre-FLPMA leases. One will expire in 1985, and one will expire in 1992. Because of high and moderate favorability for oil and gas, and coal and humates, it is reasonable to assume mineral exploration and perhaps development would be pursued (refer to Table 5 and Maps 5 and 6).

Designating the La Lena WSA as wilderness would withdraw it from appropriation under the mining laws and from leasing under the mineral leasing laws, subject to pre-FLPMA oil and gas valid existing rights. As economic conditions change, the development of the La Lena WSA's oil and gas, and coal and humate resources may become attractive. Assuming favorable economic conditions sufficient coal is present that a moderate-sized coal surface mine could be developed in the WSA. The inability to do so could impact mineral exploration and development in the long-term.

Impacts to Recreation Off-Road Vehicle (ORV) Use

ORV use includes 2-wheel, 3-wheel, and 4-wheel vehicles. None of these vehicles would be allowed within a designated wilderness area, unless by permit based on the guidelines in the BLM Wilderness Management Policy. This would preclude back-country riding and exploring, vehicle camping, and those who rely on vehicular access in order to hunt. Under the All Wilderness Alternative no vehicular access would be allowed on 8 miles of vehicular ways.

Impacts to Raptor Habitat

San Luis Mesa located within La Lena WSA has been identified as one of the most important raptor nesting areas within northwest New Mexico for at least 5 species of birds of prey including golden eagles, great horned owls, red-tailed hawks, prairie falcons and kestrels. The All Wilderness Alternative would retain the existing undisturbed raptor habitat, by maintaining current low levels of human activity, mineral exploration and development and minimal habitat destruction.

Impacts to Livestock Grazing

The existing level of livestock grazing would continue in the La Lena WSA under wilderness designation. Wilderness designation would not prevent any increase in Animal Unit Months based on Allotment Management Plans (AMPs).

Livestock operations in this WSA would be affected to some degree--though not significantly--by wilderness designation, as a result of limitations imposed on the maintenance of existing range improvements. Although grazing is a permissible and compatible activity with wilderness, limitations on the type of construction materials, location of new improvements, and extent of vehicular access may occur in order to protect wilderness characteristics. Casual use of vehicles for inspection or repair

of existing facilities would be precluded. Wilderness designation could hinder the effective use of limited time to tend to weekend ranching operations through restricting vehicular use.

NO WILDERNESS ALTERNATIVE (Proposed Action)

In the Albuquerque District Wilderness Draft Environmental Assessment, the Wilderness Analysis Report for this WSA (Appendix C) included an alternative to amend the existing land use plan (the No Wilderness Alternative). Since the Draft's publication in March 1983, a comprehensive land use planning effort was initiated in the Rio Puerco Resource Area. This effort is called a Resource Management Plan (RMP). The La Lena WSA is now being considered for special management in the Draft Rio Puerco Resource Management Plan (USDI, BLM 1985). As a result, the scope of the No Action Alternative for this WSA was changed in the Final EA to include the previously separate No Wilderness Alternative.

Until Congress makes its decision on wilderness designation, the WSA will be managed under the Final Interim Management Guidelines for Lands Under Wilderness Review (USDI, BLM 1983). If Congress designates it as wilderness, the WSA will be managed under the Wilderness Management Policy (USDI, BLM 1981).

If the WSA is not designated as wilderness, it will be managed under the No Wilderness Alternative, which would involve management under other than wilderness policy. Management would follow the guidelines of the approved Rio Puerco RMP. The RMP is expected to be approved in late 1985 while the wilderness study process is still underway. Therefore, the RMP decision concerning this WSA may be incorporated into the Wilderness Study Report to be written later in the process. The Draft RMP proposal for the La Lena WSA currently emphasizes management for the WSA's raptor habitat.

If the approved RMP does not include a special designation for any portion of the La Lena WSA, the WSA would be managed under the No Wilderness Alternative according to multiple use concepts without stressing raptor habitat values. The most probable uses of the La Lena WSA would be livestock grazing, mineral exploration and development, and ORV use.

Mineral exploration would most likely include upgrading of existing vehicular ways, the creation of additional access routes, drilling operations and possibly blasting as well as surface mining. Recreational ORV use could be expected to increase because of the La Lena WSA's close proximity to Albuquerque and the population expansions anticipated for this metropolitan area. Increased recreational ORV use has been noted the past 3 years and this trend is expected to continue. Upgrading of existing vehicular ways and the creation of additional access routes would likely occur in association with livestock grazing.

Impacts to Wilderness Values

Anticipated mineral exploration and development, increased ORV activity and greater use of motorized vehicles would result in disruption of wildlife habitat, the deterioration of visual values, as well as reduce the opportunity to experience solitude. Over time, all of these uses could be expected to significantly impact naturalness.

The WSA's soils are very susceptible to erosion and thus very sensitive to increased motorized activity. This would have an impact on vegetation, including 3 rare plant species, which in turn could impact a wide variety of wildlife species.

Increased access and thus increased activity and noise levels would disrupt the nesting season for raptors who utilize the San Luis Mesa portion of the WSA for nesting sites. San Luis Mesa is considered to be one of the most important nesting areas within northwest New Mexico for at least 6 species of birds of prey. Scaled quail, and non-game bird species utilize grasses and shrubs along arroyos as well as rolling grasslands. Nesting seasons extend from February to August depending on the species. The birds are particularly susceptible to increased activity during this time. Not only will habitat be destroyed and nesting activities interrupted, but total nest abandonment is likely. Increased activity and habitat damage could be expected to impact all game and non-game species and diminish the existing wildlife populations. Overall, the impacts to wildlife under this alternative would be significant because of the extensive ecosystem modifications, and increased activity that will likely occur.

Under this alternative, direct impacts to cultural resources from ORV use, although slight, would increase though time as user demand grows. Indirect impacts (the effects not directly caused by vehicles themselves) contribute substantially to loss of cultural resources by providing relative ease of discovery, access, tool and equipment transport, artifact and specimen transport, and speed of action. These indirect impacts would increase dramatically under the No Wilderness Alternative.

Not curtailing additional access and ORV activity would ultimately reduce the scenic quality B rating for the La Lena WSA. ORV activity, both authorized and unauthorized, is expected to accelerate in the WSA. Since additional roads predispose increased surface disturbance and cultural modification of visual resources, an expanded road network (particularly those caused by unauthorized use) tends to shift visual resources from high scenic quality A & B, to a lower scenic quality of C & D. Surface modification resulting from oil and gas development or coal surface mining would significantly impact the La Lena WSA's visual resources.

The natural setting supporting the La Lena WSA's special features, including 3 rare plant species, abundant cultural sites, the San Luis Mesa Raptor area, and a variety of wildlife species would be subject to increased surface disturbance and vehicular travel. Management under the No Wilderness Alternative would significantly degrade the WSA's potential for use as a "natural laboratory".

The natural settings on which Native American uses are often dependant would be subject to increased surface-disturbing activities. The impacts to Native American uses of this WSA are unquantifiable, because of lack of access to proprietary information held by the various pueblos.

To date no protective designation has occurred for the La Lena WSA. The cumulative effect of this lack of protective designation and non-wilderness management practices would be to degrade or eliminate the WSA's wilderness characteristics. Under this alternative, the impacts to wilderness values could be significant over the long term because protective management of the WSA would not be ensured through Congressional designation.

If the La Lena WSA were to become a Special Management Area under the approved RMP, it could still be subject to mineral exploration and development. In addition, the Special designation would be administrative in nature, subject to continued revision, updating and amending. It would not provide the long term assurance of effectively managing the La Lena WSA's wilderness characteristics that Congressional designation would.

Impacts to Raptors

San Luis Mesa, located within the La Lena WSA, has been identified as one of the most important raptor nesting areas within northwest New Mexico for at least 5 species of birds of prey as noted previously. Increased access and thus increased activity and noise levels resulting from mineral exploration and development and ORV activity would disrupt the nesting season for raptors. Increased noise, human activity, cultural modifications as well as habitat damage will disturb nesting and could easily cause nest abandonment.

APPENDIX 8

OJITO WSA (NM-010-024)

SECTION 1 GENERAL DESCRIPTION

LOCATION

The Ojito Wilderness Study Area (WSA; NM-010-024) contains approximately 11,919 acres of public land, and is located approximately 5 miles southwest of the village of San Ysidro. It is delineated on the north by property boundaries, on the south by a combination of a gas pipeline right-of-way and a maintained road, on the west by a powerline right-of-way, and on the east by a combination of a maintained road and a ridgeline (refer to Maps 1 and 2).

The U.S. Geological Survey topographic maps that cover this WSA are Ojito Spring, San Ysidro, Sky Village NE, and Sky Village NW (7.5-minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Ojito WSA lies at the approximate center of northwestern New Mexico. Physiographically, the WSA is in the Navajo Section of the Colorado Plateau Province. The Navajo Section is characterized by outcrops of sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Landforms in this region include mesas, cuestas, rock terraces, retreating escarpments, canyons, arroyos, and badlands.

Approximately 600 feet of relief exist in the Ojito WSA. From a low elevation of 5,650 feet in Querencia Arroyo, the terrain reaches up to 6,261 feet on a mesa top in the northwestern part of the WSA. Principal landforms in the Ojito WSA are Bernalillito Mesa and the southern end of Cucho Mesa. The major drainages found in the WSA are Cucho Arroyo, Querencia Arroyo, Arroyo Bernalillito, and Arroyo La Jara. The overall geomorphology of the WSA is formed by arroyos cutting sandstone-capped mesas.

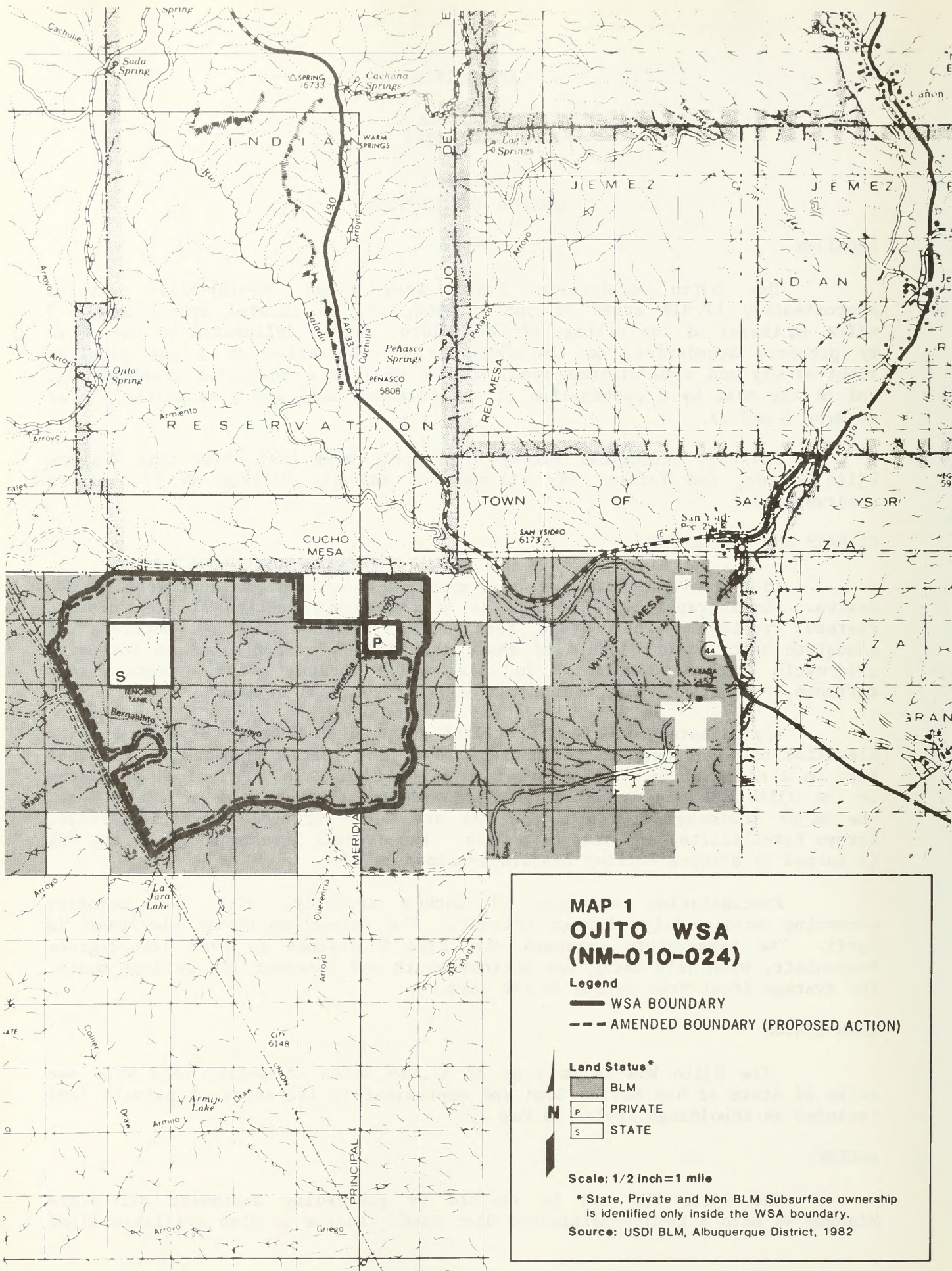
Precipitation averages 10 inches annually, with the majority occurring during July through October. The driest month of the year is April. The temperature extremes vary from 0 degrees to over 100 degrees Fahrenheit, with July being the hottest month and December the coldest month. The average frost-free period is 148 days.

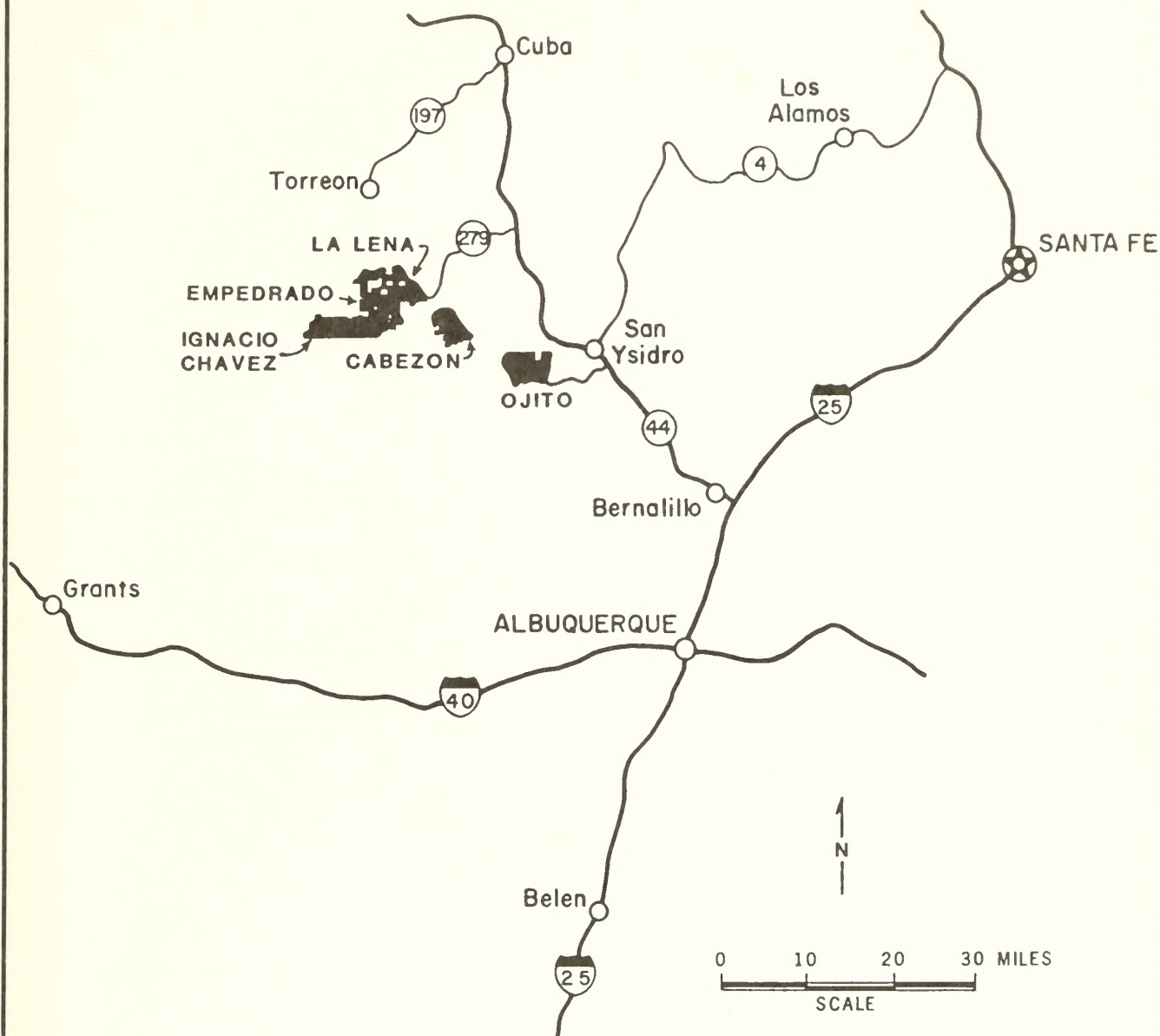
LAND STATUS

The Ojito WSA is made up of 11,919 acres of public land with 640 acres of State of New Mexico land and approximately 160 acres of private land included as inholdings (refer to Map 1).

ACCESS

The Ojito WSA can be reached by proceeding southwest off State Highway 44 onto a county-maintained dirt road. Access is also available along





LEGEND
 **WILDERNESS STUDY AREAS**

MAP 2
GENERAL LOCATION

utility right-of-way roads to the south and west, and along a maintained road forming part of the eastern boundary (refer to Map 2).

PROPOSED ACTION, ALTERNATIVES, AND ISSUED

A detailed description of those actions associated with the proposal and alternatives is provided in Table 1.

The significant environmental impacts by alternative for each of the environmental issues are summarized in Table 2.

TABLE 1
DESCRIPTION OF THE PROPOSED ACTION
AND ALTERNATIVES

All Wilderness	Amended Boundry (Proposed Action)	No Action
<p>oManage 11,919 acres as wilderness</p> <p>-Exploration and development of one pre-FLPMA oil and gas lease would be allowed.</p> <p>-11,919 acres of moderate potential uranium, 11,919 acres of moderate potential oil and gas, 37 acres of high potential sand and gravel, and 1,093 acres of moderate potential geothermal would be closed to exploration and development.</p> <p>-Close 6 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 4 dirt tanks and replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p> <p>-Attempts would be made to acquire 700 acres of state and private lands within the WSA.</p> <p>-Approximately 10 miles of vehicular ways traditionally used for an annual motocross race would be closed.</p>	<p>oManage 11,297 acres as wilderness</p> <p>-One pre-FLMPA oil and gas lease would be eliminated from WSA.</p> <p>-11,297 acres of moderate potential uranium, 11,297 acres of moderate potential oil and gas, 471 acres of moderate geothermal potential would be closed to exploration and development.</p> <p>-Close 6 miles of vehicle ways.</p> <p>-Require permits for vehicle access to 4 dirt tanks and replacement of allotment fences. Casual vehicle use for inspections and minor repairs would be precluded.</p> <p>-Current grazing levels would continue.</p> <p>-Approximately 10 miles of vehicular ways traditionally used for an annual motocross race would be closed.</p> <p>-Attempts would be made to acquire 640 acres of state lands within the WSA.</p> <p>oManage 622 acres without wilderness protection.</p> <p>-622 acres would be open to mineral exploration and development.</p> <p>-Current grazing levels would continue.</p> <p>-Vehicle use would be allowed to continue on 622 acres.</p>	<p>oManage 11,919 acres without wilderness protection.</p> <p>-Vehicle use would be allowed to continue.</p> <p>-11,919 acres of moderate potential uranium, 11,919 acres of moderate potential oil and gas, 37 acres of high potential sand and gravel, and 1,093 acres of moderate geothermal potential would be open to exploration and development.</p> <p>-No special emphasis would be made to acquire state and private lands.</p> <p>-Current grazing levels would continue.</p> <p>-11,919 acres would be available for permitted recreation ORV activity.</p>

TABLE 2

SUMMARY OF SIGNIFICANT IMPACTS

Alternative by WSA/Acreage	Major Environmental Issues			
	Wilderness Values	Uranium, Oil and Gas, Geothermal, and Sand and Gravel Exploration	Fuelwood Cutting	Recreation Off-Road Vehicle (ORV) Use
All Wilderness (11,919 acres)	<ul style="list-style-type: none"> -Maintain Ojito's natural character. -Maintain opportunities for solitude and primitive and unconfined recreation, -Protect soils susceptible to erosion and vegetation. -Protect 6 rare plant species. -Maintain current high scenic quality. -Maintain current undisturbed condition of abundant and diverse cultural sites. -Maintain paleontological sites. -Maintain current wildlife habitat supporting migrating waterfowl, mule deer, antelope, gray fox, bobcat, mountain lion, golden eagles, red-tailed hawks. -Retain, through long term protection, the "natural laboratory" setting used by local schools for environmental education. 	<ul style="list-style-type: none"> -Eliminate mineral exploration on 11,919 acres of moderate potential oil and gas, 11,919 acres moderate potential uranium, 37 acres high potential sand and gravel, 1,093 acres of moderate geothermal potential. 	<ul style="list-style-type: none"> -Provide a powerful administrative tool to curb fuelwood cutting currently threatening regeneration of some pinyon-juniper stands. 	<ul style="list-style-type: none"> -7 miles of vehicle ways would be closed for recreation uses, including 2-wheel, 3-wheel, 4-wheel vehicles. This will impact backcountry exploration, vehicular camping, some hunting and motocross racing.
Amended Boundary (11,297 acres) (Proposed Action)	<ul style="list-style-type: none"> -Same as All Wilderness Alternative. Although naturalness would be affected on the 622 acres released, wilderness values in this region are marginal. Therefore no overall impact on wilderness would result. -Enhance manageability of Ojito's wilderness resources 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative except for 622 acres eliminated 11,297 acres of moderate potential oil and gas, 11,297 acres of moderate potential uranium, 471 acres of moderate geothermal potential would be eliminated from exploration. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative. 	<ul style="list-style-type: none"> -Same as All Wilderness Alternative except for 622 acres where ORV use would continue.

TABLE 2 (Cont'd)

Alternative by WSA/Acreage	Major Environmental Issues			
	Wilderness Values	Uranium, Oil and Gas, Geothermal, and Sand and Gravel Exploration	Fuelwood Cutting	Recreation Off-Road Vehicle (ORV) Use
No Wilderness (11,919 acres)	<ul style="list-style-type: none"> -Over the long term, anticipated mineral exploration and increased ORV activity, would result in an increased road network and access throughout the WSA. This access would attract activities which would: -Degrade Ojito's natural character through woodcutting, removal of natural vegetation, creating of informal campsites, and trash dumping. -Reduce opportunities for solitude and primitive and unconfined recreation. -Threaten fragile soils and vegetation, including 6 rare plants species. -Degrade high scenic quality. -Disturb nesting seasons for both raptors and other species, possibly to the point of nest abandonment. -Destroy habitat for both non-game and game wildlife species, diminishing existing populations including golden eagles, red-tailed hawks, mule deer, gray fox, antelope, bobcat, and mountain lion. -Encourage poaching. -Degrade abundant and diverse cultural resources. -Degrade paleontologic resources. -Significantly degrade potential for use as a "natural laboratory" as used by local schools for environmental education. 	No Impact.	No Impact.	No Impact

SECTION 2

EXISTING RESOURCES

GEOLOGY

Structurally, the Ojito WSA is relatively simple. Few faults and only gentle folding occur (associated with the termination of the McCarty's Syncline). The regional dip is at a low angle to the northwest and is into the San Juan Basin. The WSA is situated on the southeastern margin of the basin near the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dips, volcanic and sedimentary rocks crop out in many small cliffs and several spectacular escarpments.

ENERGY AND MINERALS

The badlands of the Ojito WSA are the result of the extensive erosion of the purple and green shales of the Brushy Basin Member of the Morrison Formation. This formation represents the uppermost layer of a sedimentary sequence that ranges in age from Pennsylvanian to late Jurassic (refer to Figure 1). Regionally this sequence is known to contain deposits of oil and gas, uranium, sand and gravel, as well as geothermal resources.

PALEONTOLOGY

The four sedimentary rock units exposed in the Ojito WSA are regionally fossiliferous. Certain areas of the Todilto Limestone contain microfossils, non-marine ostracods (crustaceans), aquatic Hemiptera (insects), salmon-like fish, and plant fragments. Within the five units of the Morrison Formation, petrified wood, dinosaur bones, invertebrate material, and plant fragments have been found. The Dakota Sandstone is marginally fossiliferous. The Mancos Shale represents deposition under fully marine conditions, with a fossil assemblage dominated by molluscs. One site consisting of dinosaur vertebrae and ribs has been discovered, but its significance has not yet been determined.

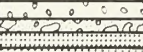





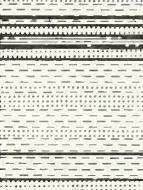

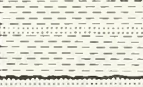


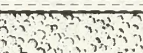
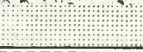





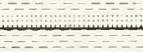







WATER

Surface Water

The WSA lies in a tributary watershed of the Rio Salado, which flows into the Jemez River and ultimately into the Rio Grande north of Bernalillo. The Rio Salado is considered part of the Middle Rio Grande Major River Sub-Basin.

Arroyos in the WSA are ephemeral and are commonly deeply entrenched into alluvium and shale. Runoff occurs at many times throughout the year, but volumes vary enormously depending on season. Peaks commonly occur during the summer and early fall months, which coincide with the rainy season from July

FIGURE 1
STRATIGRAPHIC SECTION,
CABEZON, EMPEDRADO, IGNACIO CHAVEZ,
LA LENA, AND OJITO WILDERNESS STUDY AREAS

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER		LITHOLOGY	
CENOZOIC	QUATERNARY		PEDIMENT SANTA FE			
	TERTIARY					
	CRETACEOUS		MESAVERDE	PICTURED CLIFFS		
				LEWIS		
		CLIFF HOUSE				
		MENEFEE				
		POINT LOOKOUT				
		CREVASSE CANYON				
		GALLUP				
		JURASSIC		MORRISON FORMATION	MANCOS	
	DAKOTA					
	BRUSHY BASIN					
	WESTWATER CANYON					
	SAN RAFAEL		RECAPTURE			
			BLUFF			
			SUMMERVILLE			
			TODILTO			
MESOZOIC	TRIASSIC	CHINLE FORMATION	UNNAMED SILTSTONE			
			PETRIFIED FOREST			
			POLEO SANDSTONE LENTIL			
			SALITRAL SHALE TONGUE			
			AGUA ZARCA			
	PERMIAN	MAGDA-LENA	SAN ANDRES			
			GLORIETA			
			YESO			
			ABO			
			MADERA			
PALEOZOIC	PENNSYLVANIAN		SANDIA			
	MISSISSIPPIAN		ARROYO PENASCO			
CAMBRIAN	PRECAMBRIAN		PRECAMBRIAN			

through September. During this period, afternoon thunderstorms may generate tremendous volumes of runoff. Comparison of rainfall data with discharge data for the summer rainy season shows that up to 99 percent of the annual discharge may occur during this period (Craig 1980).

Average annual water yields from the area fall between 0.1 and 0.5 inches (.25 inches average or 2,645 acre feet per year). Yields vary considerably from one year to the next.

Ground Water

The Ojito WSA lies within the state-declared Rio Grande Underground Water Basin. One known undeveloped water well is located within the WSA, as well as several springs.

SOILS

Soils in the Ojito WSA are generally unsuitable for successful application of management practices such as range reseeding or earthen pond construction. They are moderately to strongly alkaline, which limits vegetation composition and productivity. All soils are highly susceptible to water erosion, and much of the WSA is undergoing accelerated soil loss.

VEGETATION

Table 3 summarizes the vegetation located in the Ojito WSA by range site. Refer to Map 3 for the location of these range sites.

Rare Plant Species

The Ojito WSA offers a high potential for the occurrence of rare plants. In addition to its high relief, it has extensive outcroppings of Todilito gypsum and a variety of Jurassic sandstones. Together, these elements afford a broad spectrum of habitats.

The Todilito gypsum outcroppings are the only known substrate for Bigelow four o'clock (Bigelow verbena-wildflower; Abronia bigelovii). A healthy and extensive population of this species has been located in the WSA. Intermingled with A. bigelovii are considerable numbers of moonpod-wildflower (Selinocarpus lanceolatus) and fleabane-wildflower (Erigeron pulcherrimus var. pulcherrimus). A small population of blue grama cactus (Pediocactus papyracanthus) was also found.

The gypsum outcroppings of the WSA are confined to the eastern edge and northeast corner. The western side of the WSA is dominated by mesa tops and rimrock. Knight (1982) found scattered populations of New Mexico kentrophyta-wildflower (Astragalus kentrophyta var. neomexicana) in these areas. This spiny little milkvetch is found in the extensive sandy pockets that occur throughout the broken sandstone bluffs.

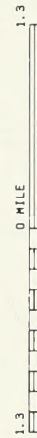
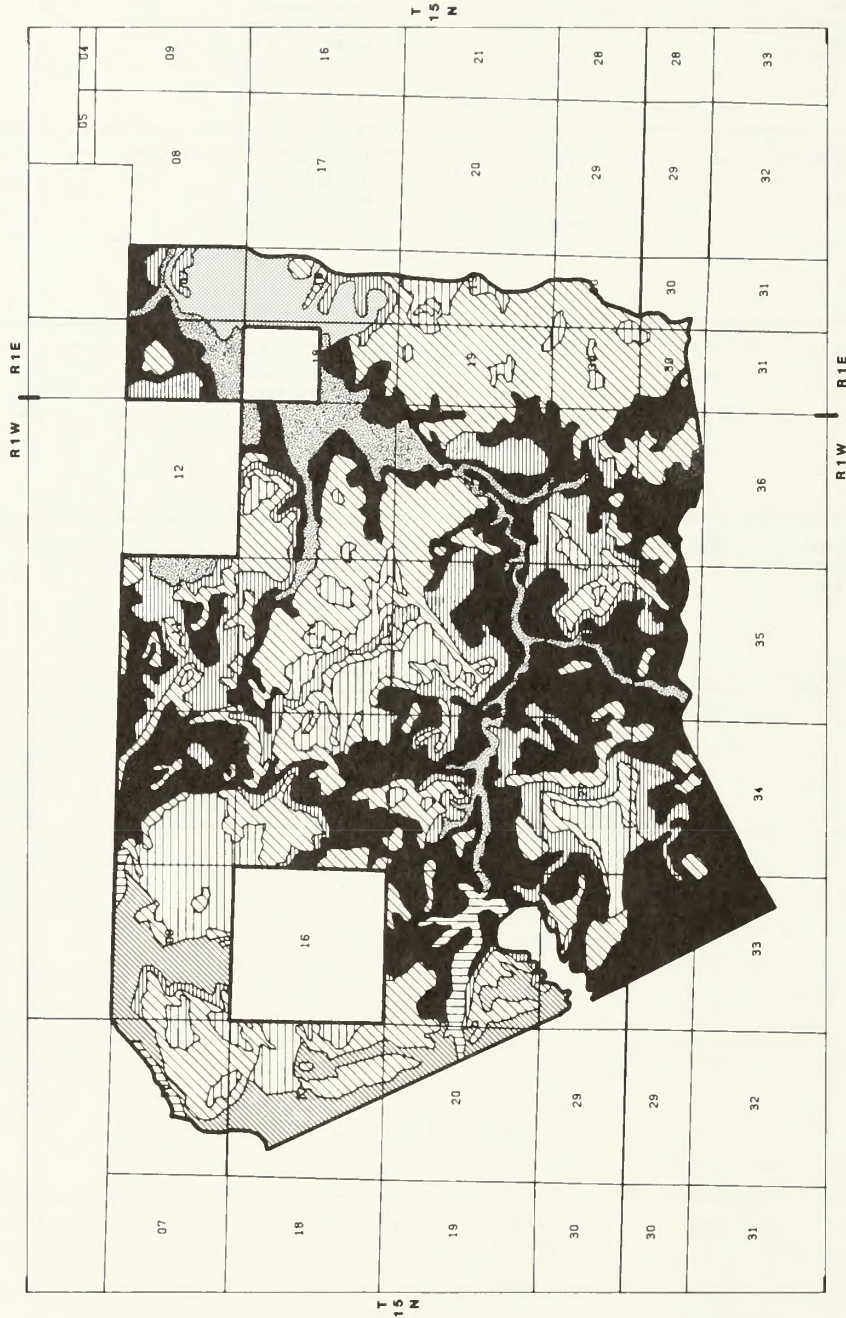
TABLE 3
VEGETATION, OJITO WSA

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Grama-galleta steppe	3	N, E, S	20	8.51	Fair-good	Galleta grass, shadscale, alkali sacaton	15	525	Sideoats grama, Indian rice-grass, black grama, NM feather-grass	060-Shingle Complex
2	Grama-galleta steppe	3	N, E	20	6.22	Fair	Galleta grass, broom snake-weed, blue grama	20	450	Blue grama, Indian rice-grass, bottlebrush squirrel-tail, four-wing salt-bush	070-Las Lucas Unnamed 07B Association
3	Grama-galleta steppe	1	E, S and nearly flat	36	5.77	Poor-good	Fourwing salt-bush, alkali sacaton, galleta grass	20	2,500	Alkali sacaton, blue grama, galleta grass, four-wing salt-bush	080-Billings Variant Silty Clay Loam
4	Grama-galleta steppe	3	N, S, W,	19	5.85	Fair	Galleta grass, broom snake-weed, yellow-flowered pricklypear	20	450	black grama, blue grama, galleta grass, Indian rice-grass	140-Penistaja Bond Association
5	Juniper-pinyon woodland	4	N, S, W and nearly flat	30	10.27	Fair	One-seed juniper, galleta grass, alkali sacaton	24	500	Sideoats grama, blue grama, little blue-stem, NM feathergrass	111-Rock Outcrop Orthents Complex
6	Grama-galleta steppe	3	N and S	17	7.02	Fair	Galleta grass, broom snake-weed, winterfat	15	475	Sideoats grama, Indian rice-grass, NM feather-grass, galleta grass, Bigelow sage	011-Trave-silla-Shingle-Eroded Rock Outcrop Complex
7	Grama-galleta steppe	3	N, E, S, and nearly flat	19	6.59	Fair	Galleta grass, broom snake-weed, alkali sacaton	20	475	Sideoats grama, blue grama, black grama, galleta grass	111-Rock Outcrop-Orthents Complex
8	Juniper-pinyon woodland	22	N, S and nearly flat	21	31.26	Poor	One-seed juniper, shad-scale, black grama	20	80	Indian rice-grass, blue grama, true mountain mahogany, cliffrose, shrub live oak	010-Trave-silla-Shingle-Rock Out-crop Complex

TABLE 3 (concluded)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
9	Grana-galleta steppe	less than 1	N, E, S and nearly flat	21	4.68	Fair	Fourwing salt-bush, alkali sacaton, blue grama	45	2,500	Vine mesquite, alkali sacaton, blue grama, fourwing saltbush	170-Kim Loam
10	Juniper-pinyon woodland	18	N, S, W	16	25.45	Poor	One-seed juniper, galleta grass, alkali sacaton	20	80	Indian rice-grass, blue grama, true mountain mahogany, cliffrose, shrub live oak	110-Rock Outcrop-Gypsum Land Complex
11	Grana-galleta steppe	2	N	13	17.50	Poor-fair	Alkali sacaton, sand dropseed, fourwing salt-bush	15	475	Indian rice-grass, blue grama, sand dropseed, spike dropseed, fourwing salt-bush	120-Sheppard Variant Loamy Sand
12	Grana-galleta steppe	1	N and nearly flat	24	11.09	Fair	Shadscale, fourwing salt-bush, alkali sacaton	15	525	Alkali sacaton, blue grama, galleta grass, fourwing salt-bush	130-Sheppard Variant-Unnamed 13 Association

MAP 3 VEGETATION, OJITO WSA



N

- RANGE SITE 3 - 138 ACRES
- RANGE SITE 4 - 1023 ACRES
- RANGE SITE 5 - 3977 ACRES
- RANGE SITE 6 - 591 ACRES
- RANGE SITE 7 - 4115 ACRES
- RANGE SITE 8 - 1629 ACRES
- RANGE SITE 9 - 601 ACRES
- RANGE SITE 10 - 39 ACRES
- TYPE LINES
- SECTIONS

BUREAU OF LAND MANAGEMENT

WILDLIFE

Two ecotypes provide habitat for wildlife in the Ojito WSA, the grama-galleta ecotype and the juniper-pinyon ecotype. These are described in Table 3 (Vegetation).

The U.S. Forest Service's 1982 Run Wild data base (on file at the Rio Puerco Resource Area) lists 131 vertebrate species possibly found in the grama-galleta vegetative type in Sandoval County. This list includes 7 species of amphibians, 65 of birds, 50 of mammals, and 19 of reptiles. In the juniper-pinyon ecotype in Sandoval County, 137 vertebrate species including 3 species of amphibians, 65 of birds, 50 of mammals, and 19 of reptiles possibly occur.

A number of bluffs and mesa edges in the WSA provide excellent nesting habitat for raptors (birds of prey), swallows, and swifts. Several stock ponds are present to provide resting areas for migrating waterfowl. Scaled quail and mourning doves inhabit the brushy draws and rocky wooded hillsides. A few mule deer occupy the juniper-pinyon ecotype, and a small band of antelope range into the northwest corner of the WSA. Other wildlife common to the WSA include coyote, fox, rabbit, horned lark, and raven. Both bobcats and mountain lions have also been sighted in the WSA.

VISUAL RESOURCES

The Ojito WSA provides a variety of scenic values inventoried as high scenic quality (Scenic Quality B), that are presently being managed under an interim Visual Resource Management (VRM) class II while the WSA is under wilderness review.

The eastern portion of the Ojito WSA incorporates Querencia Arroyo, which meanders from north to south and is bounded by a steep-sided canyon. High rocky bluffs beyond the canyon to the east and west frame distant views of Cabezón Peak, Mesa Prieta, and the Sandia Mountain Range. Red-toned bluffs, pale limestone mesa edges, and dark green junipers contrast with the blue skies. Bands of shales, sandstones, and limestone highlight the canyon walls, distinct from the surrounding desert tans. Extending westward are rock terraces dissected by rocky canyons that climb to expansive plateaus and mesa tops.

Retreating escarpments that step back from the uplands are honeycombed with pockets of impressive scenic features. Some pockets contain sculptured badland formations of sandstone in many shapes and sizes. Other sheltered pockets contain residual ponderosa pine populations that are rare in this environment. Still other pockets reveal a variety of features including petrified wood and multi-colored rock layers.

CULTURAL RESOURCES

Cultural resource inventory within the Ojito WSA covers one section (640 acres) out of a total of 11,919 acres, or about 5 percent. Several small BLM surveys and energy-related linear surveys have also been conducted. These suggest that well over 500 sites are located within WSA boundaries, and that the density would average in excess of 21 sites per section.

Most of the WSA's recorded sites (27 out of 43) are located within the single section surveyed. Of these sites, none are PaleoIndian. Reports of Folsom points and other PaleoIndian materials have occurred in the general WSA vicinity, but the location patterns and probability of occurrence of PaleoIndian sites remains unknown. One additional site (Ojito Dune Site), excavated in the late 1960's, contains both PaleoIndian and Archaic components.

Twelve Archaic sites are reported for the WSA, and range in nature from small lithic scatters to large scatters with ground stone, cists, ash, and fire-affected rock present. Known Archaic sites are located in sand dune areas on low mesa terraces. Existing survey data suggests relatively frequent and extensive use within this WSA by Archaic-period populations.

No Basketmaker sites are reported for this WSA. However, indications of sizeable Archaic and prehistoric pueblo occupations within the WSA (occurring before and after the Basketmaker period) suggest that some evidence of Basketmaker occupation also exists.

Eleven prehistoric pueblo sites are reported for the WSA, ranging from the Pueblo I time period through Pueblo IV (750 A.D.-1400 A.D.) (refer to Table 4). Pueblo sites in this general region tend to be located on mesa tops and mesa terraces; they range in nature from lithic/sherd scatters to small pueblos of 30 or more rooms.

Two Navajo sites are recorded within the Ojito WSA. Additional Navajo sites can be anticipated for this WSA, but far fewer in total numbers than sites from earlier time periods.

Historic use of the middle Rio Puerco drainage (and therefore the WSA) has been moderately extensive. Spanish settlers entered the valley before the 18th century, and remnants of an Hispanic population remain today. Seven historic sites are known within the WSA, of which six are habitational. One is a livestock corral. The recorded sites show a location preference for drainage bottoms and lower canyon slopes. Projected site densities for historic sites should be high for these locations within this WSA.

AIR QUALITY

Ambient air quality monitoring data for the general area of the Ojito WSA was collected during 1975-76 by the State of New Mexico Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

TABLE 4

ARCHAEOLOGICAL SEQUENCE FOR THE RIO PUERCO RESOURCE AREA
(After Dittert, 1959)

Cultural Period	Time	Cultural Period	Time
PaleoIndian	Before 250 B.C.	Pueblo II	870-950 A.D.
Archaic	Before 250 B.C.- 700 A.D. (500-700 BMIII)	Pueblo II	950-1100 A.D.
		Pueblo III	1100-1200 A.D.
Basketmaker	700 A.D. 800 A.D.	Pueblo III-IV	1200-1400 A.D.
		Pueblo IV	1400-1600 A.D.
Pueblo I	800-870 A.D.	Pueblo V	1600-Recent

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

No exploration or development activity associated with locatable, leasable, or salable minerals is occurring within the boundaries of the Ojito WSA. No recordation of mining claims has been made. Although 14 oil and gas leases have been issued (refer to Map 4), no producing wells have been completed and the level of exploration activity has been low.

Table 5 indicates that the highest potential for development is associated with uranium in the Morrison Formation as well as oil and gas. The geologic environment, inferred geologic processes, reported mineral occurrences, and known mines or deposits indicate a high favorability for the accumulation of sand and gravel on 37 acres and moderate potential for oil and gas and uranium resources on 11,919 acres (refer to Maps 5 through 8).

The development of sand and gravel is also questionable because these salable resources are widespread and more readily accessible in other areas.

WATERSHED

The main drainage bottoms of the WSA are in the latter stages of an erosion cycle that was apparently initiated by sheep and cattle overgrazing in the late 1800's and early 1900's. This past grazing use has resulted in extensive sheet, rill, and gully erosion in all areas except the steep slopes of mesas. The WSA is especially vulnerable to upland erosion because of sparse vegetation, relatively steep slopes, and the occurrence of violent thunderstorms. Leopold (1966) found that upland sheet erosion was the most significant source of sediment in a semi-arid area of New Mexico during a 6-year period.

LIVESTOCK GRAZING

Four grazing allotments are located within this WSA (refer to Map 9). Table 6 displays grazing information pertaining to these four allotments. The WSA supports 1,207 Animal Unit Months.

Most of the operators grazing livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. They live in the vicinity of Cuba and Albuquerque, near their primary sources of income. Therefore, most of them can attend to their grazing allotments only on weekends, and the pickup truck has become increasingly important as a livestock management tool.

MAP 4 OJITO WSA MINERAL LEASES

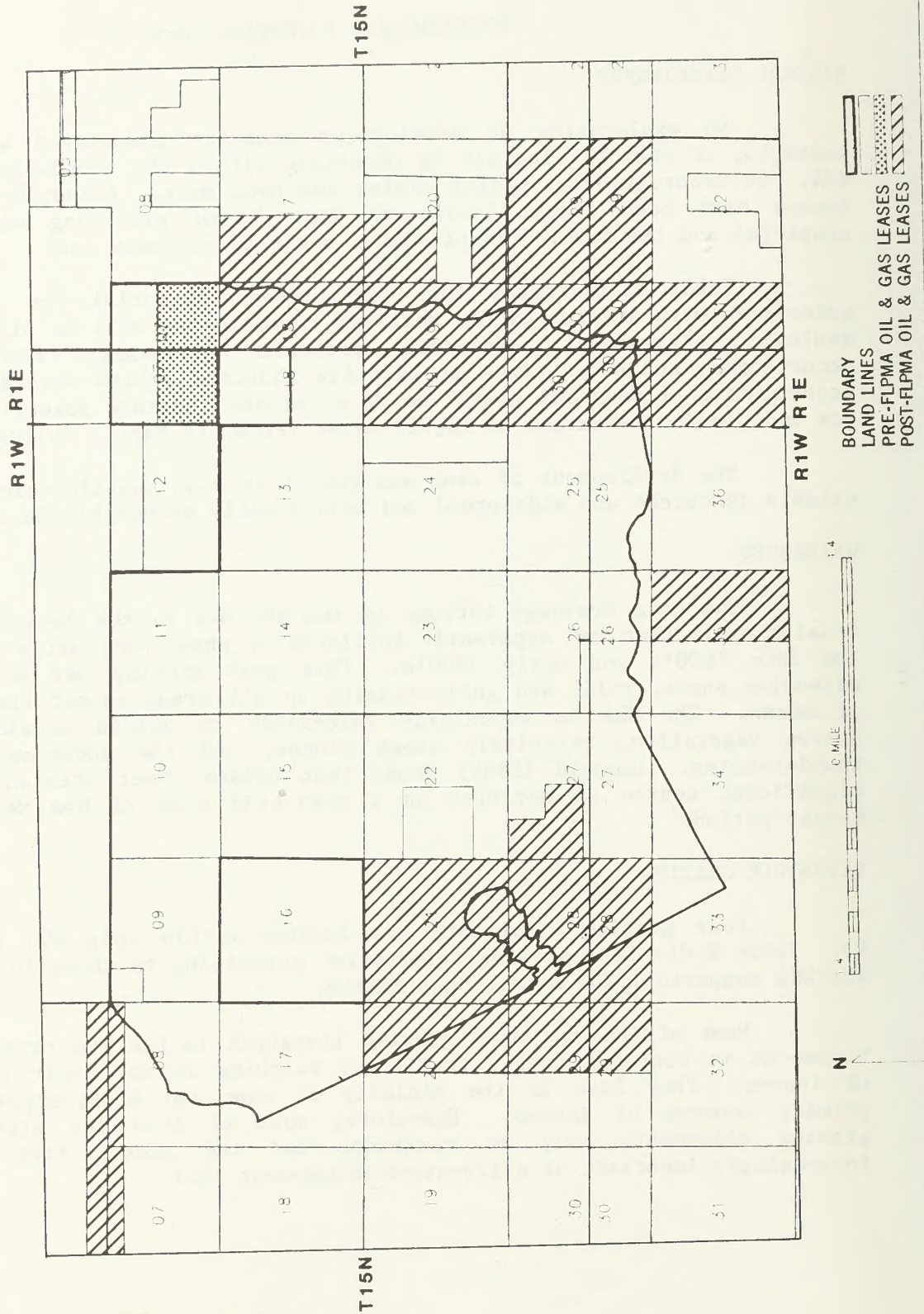


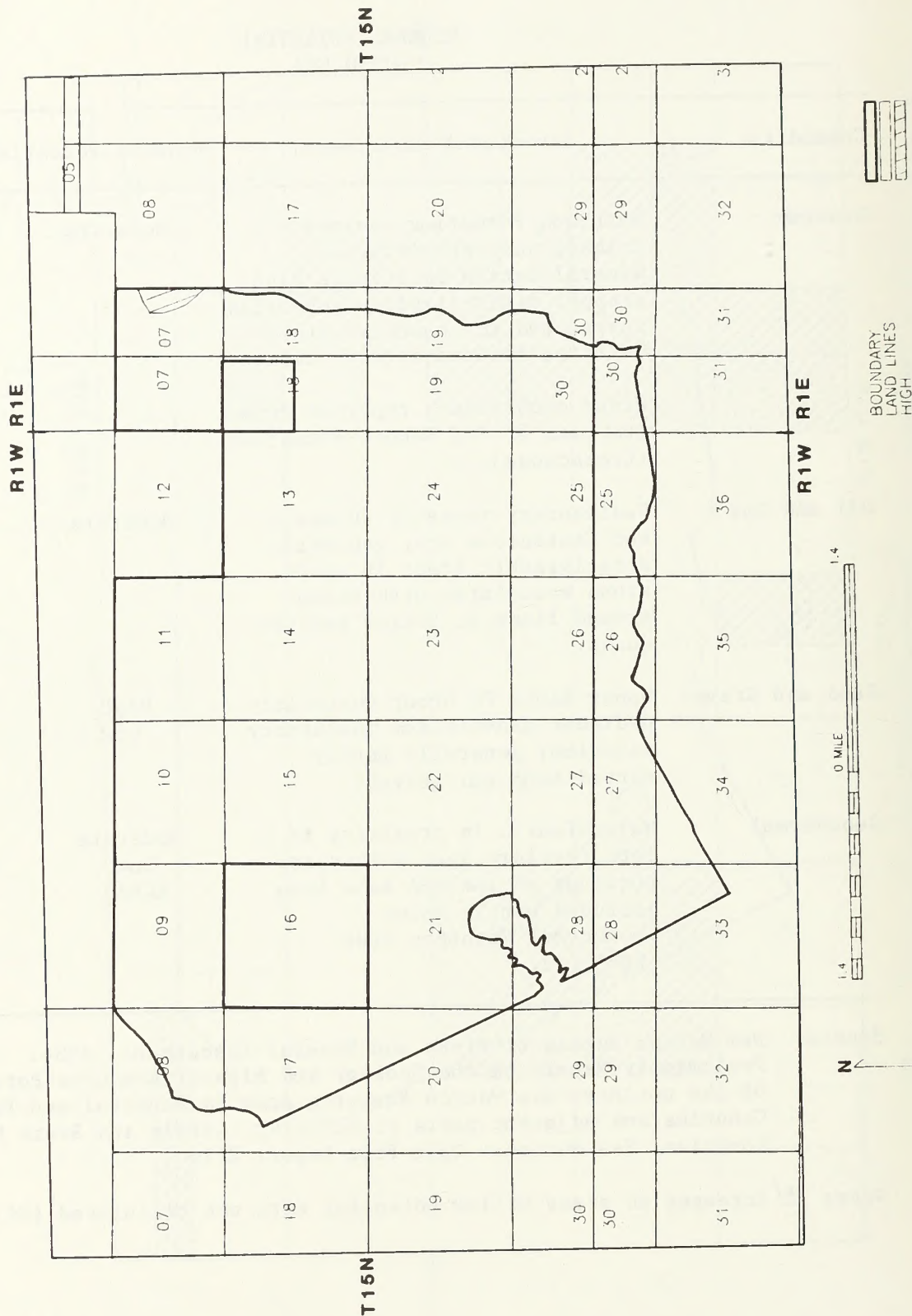
TABLE 5
MINERAL POTENTIAL
OJITO WSA

Commodity	Associated Environment	Mineral Potential	Acreage
Uranium	Morrison Formation (Jurassic); Primary and redistributed mineralization in arkosic sand- stones; mineralization generally restricted to channels within deltaic, braided-stream complex. Minor occurrences reported from the base of the Dakota Formation (Cretaceous).	Moderate	11,919
Oil and Gas	Sedimentary rocks of Jurassic and Cretaceous age; generally stratigraphic traps in sand- stone associated with paleo- strand lines or buried aeolian dunes.	Moderate	11,919
Sand and Gravel	Upper Santa Fe Group Quaternary pediment gravels and Quaternary alluvium; generally poorly sorted sand and gravel.	High Low	37 NCA/
Geothermal	Major faults in proximity to late tertiary aged volcanics; portions of the WSA have been included within Known Geothermal Resource Area (KGRA) f2.	Moderate Low KGRA	1,093 NCA/ 11,919

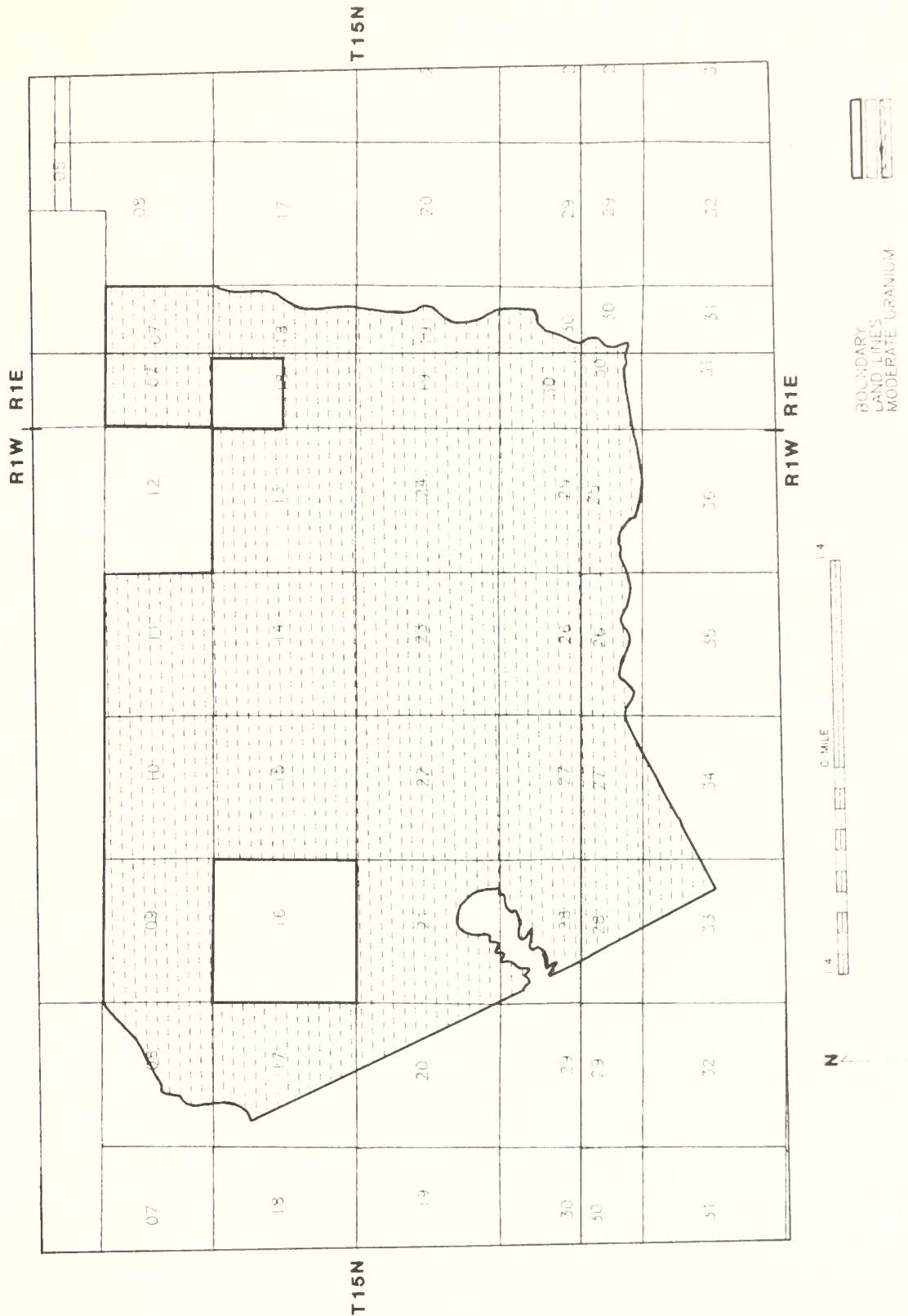
Source: New Mexico Bureau of Mines and Mineral Resources. 1984.
Preliminary Report on the Geology and Mineral Resource Potential
of the northern Rio Puerco Resource Area in Sandoval and Bernalillo
Counties and adjacent parts of McKinley, Cibola and Santa Fe
Counties, New Mexico. Open File Report 211.

Note: ^{a/} Acreages on areas of low potential were not calculated (NC).

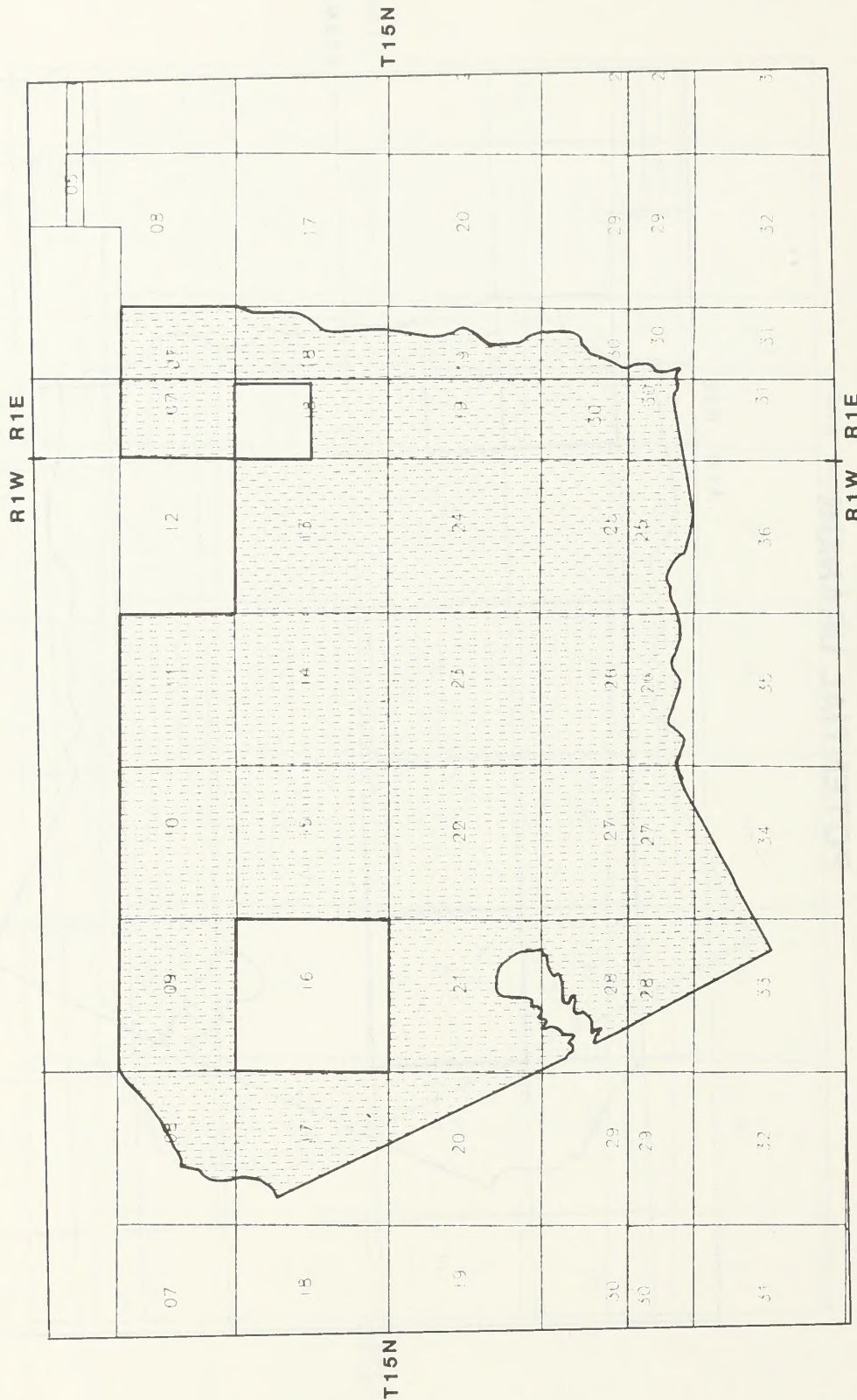
MAP 5 OJITO WSA POTENTIAL SAND & GRAVEL



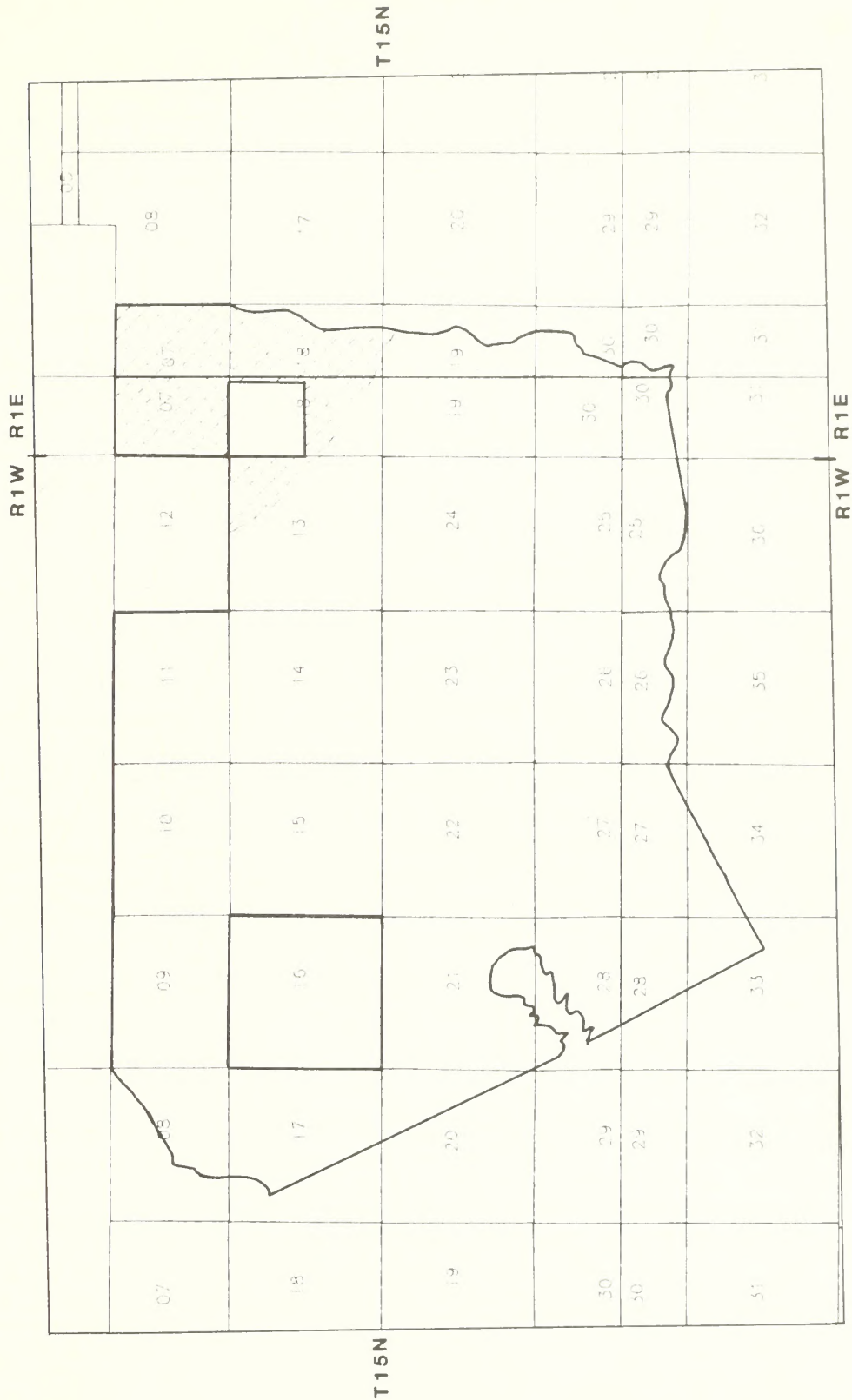
MAP 6 OJITO WSA POTENTIAL URANIUM



MAP 7 OJITO WSA POTENTIAL OIL & GAS



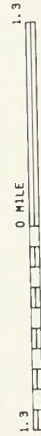
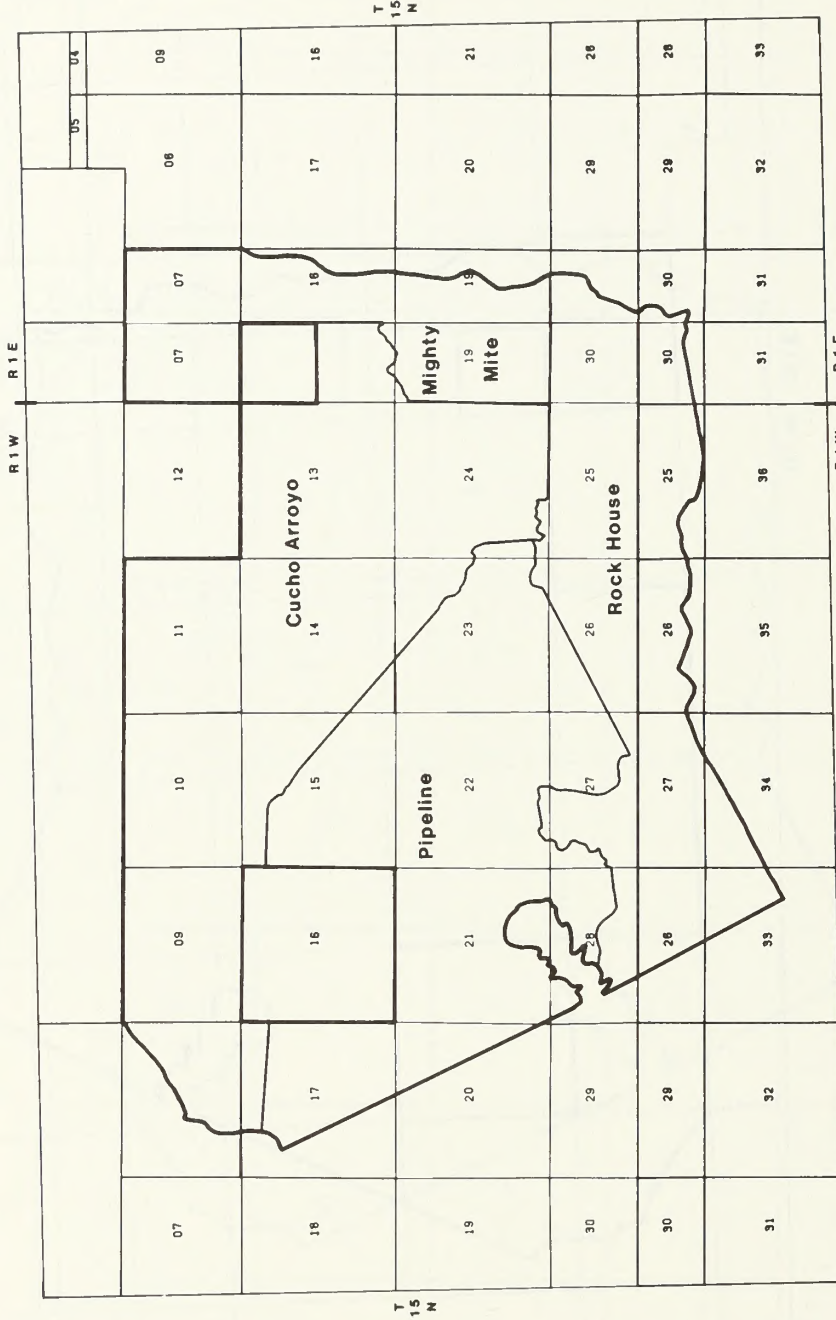
MAP 8 OJITO WSA POTENTIAL GEOTHERMAL



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BOUNDARY
LAND LINES
MODERATE

MAP 9 RANGE ALLOTMENTS, OJITO WSA



ALLOTMENTS
SECTIONS
NM-010-024



BUREAU OF LAND MANAGEMENT

TABLE 6
RANGE ALLOTMENT INFORMATION

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Numbers	Season of Use
Mighty Mite	0058	1,099	987	1	21 head	6 months (12/1-5/31)
Cucho Arroyo	0057	6,429	4,379	2	110 head	6 months (12/1-5/31)
Pipeline	0056	13,611	3,126	1	107 head	Yearlong
Rock House	0060	14,712	2,427	2	106 head	Yearlong

All Allotments

No new range improvements are planned for any of these allotments.

FOREST PRODUCTS

Pinyon and juniper are the two major tree species that grow in the WSA. Little potential exists for commercial firewood use because of the low stand density. Considerable illegal cutting for firewood continues to be a problem in the Ojito WSA, particularly along its eastern and southern boundary.

The WSA contains a few residual ponderosa pine trees located in several small "pockets". They are not considered marketable timber.

RECREATION

To describe the existing recreation environment, the BLM's Recreation Information System (RIS) utilized a quality evaluation system that rates the quality of experience a visitor can expect while participating in a specific activity. The Ojito WSA has been divided into two RIS units and rated for the five activities shown in Table 7. The most current inventory of recreation opportunity (Recreation Opportunity Spectrum) has identified the majority of the Ojito WSA as semi-primitive non-motorized (SPNM).

TABLE 7
RECREATION QUALITY EVALUATION

Activity	Mineral Springs Unit	Bernalillo Arroyo Unit	Key Factors
ORV use	Medium	High	Soil, size, hazards, usability
Sightseeing (Scenery)	High	Low	Landform, color, water, vegetation, uniqueness, intrusions
Sightseeing (Geological)	High	-	Extent, representative type, form, color, frequency of occurrence
Big Game Hunting	Low	-	Game population, ease of movement, shooting opportunity
Primitive Values	High	-	Scenic qualities, size, intrusions, wildlife, fisheries, water, usability, uniqueness

Southwest Off-Road Enterprises of Albuquerque has sponsored the "Oh My God 100" motorcycle (motocross) race in and around the WSA seven times since 1975. Approximately half the course follows WSA boundary roads, and the remaining portions have run along existing trails and arroyo bottoms in the WSA. The Recreation Management Area (RMA) plan lists 708 visitor days and 850 visits for the area in FY 1981, most of which occurred on the day of the race (refer to Figure 2).

The WSA offers opportunities for scenic and geological sightseeing, rockhounding, horseback riding, photography, hiking, and camping. Random ORV use associated with hunting occurs in the WSA. A small group of artists, photographers, and nature enthusiasts have utilized the Ojito WSA consistently since the mid 1950's.

The Ojito WSA lies within New Mexico State Planning District 3. Recreation demand in this district is indicated in a study completed by the University of New Mexico's Bureau of Business and Economic Research (1975). Assessing non-developed recreation demand on a regional level is an indicator of the type of activities that the area may be required to support (refer to Table 8).

FIGURE 2 NUMBER OF PARTICIPANTS PER RACE DATE
 "OH MY GOD 100" MOTORCYCLE RACE
 OJITO WSA

NUMBER OF
 PARTICIPANTS

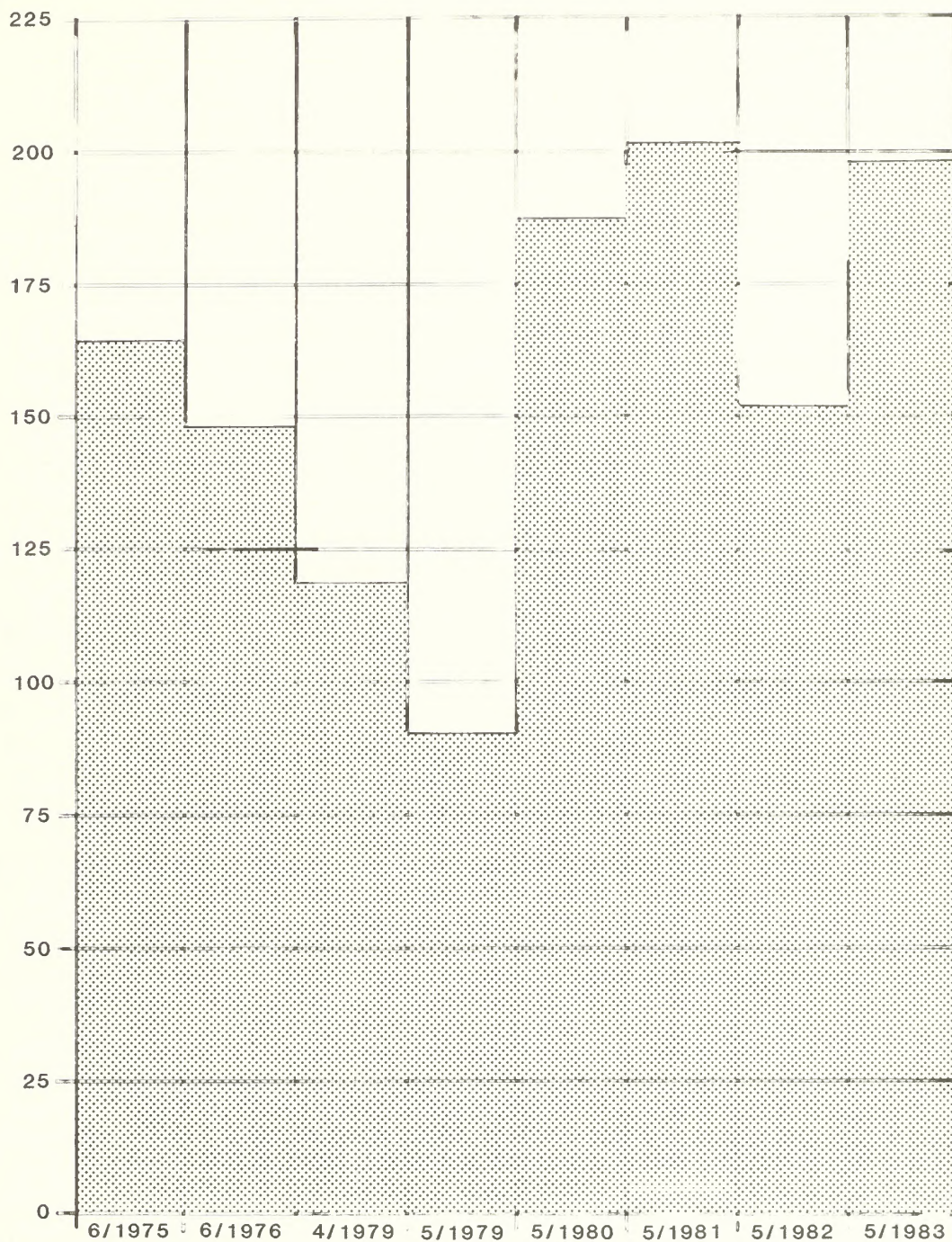


TABLE 8

REGIONAL RECREATION DEMAND, NEW MEXICO PLANNING DISTRICT 3
(based on visitor-use days)

Activity and Projected Use Figures	1975	1980	1985	1990
Pleasure walking	7,487,332	8,448,000	9,209,000	10,002,000
Birdwatching	1,394,103	1,573,000	1,714,000	1,862,000
Horseback riding	1,249,915	1,410,000	1,538,000	1,669,000
Photography/Painting	1,051,006	1,186,000	1,293,000	1,404,000
Sightseeing	925,059	1,043,000	1,138,000	1,236,000
Picnicking	786,083	887,000	967,000	1,050,000
Hiking	427,351	482,000	526,000	571,000
Rock hounding	424,745	479,000	522,000	567,000
Visiting historical sites	422,573	477,000	520,000	564,000
Camping	394,444	445,000	485,000	527,000
Small game hunting	247,551	279,000	304,000	331,000
Backpacking	111,180	125,000	137,000	148,000
Big game hunting	98,151	111,000	121,000	131,000

EDUCATION/RESEARCH

The diversity of special features contained within the Ojito WSA, along with its close proximity to two of the largest population centers in New Mexico (Albuquerque and Santa Fe), make this WSA an ideal "natural laboratory".

Special features include wildlife, historic, prehistoric, paleontologic, geologic and scenic elements, as well as threatened and endangered vegetation. All of these values are available for study in a natural setting and lend themselves to interpretation for any age or development level. The WSA presently serves one Albuquerque High School class as an on-site laboratory for its semester study of environmental issues.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia, and Santa Ana peoples) have traditionally used the Ojito WSA for firewood gathering and hunting. Some use continues presently. The Jemez Snake Catching Clan has traditionally collected snakes in the WSA, but it is not known if this use continues.

Recent survey near the WSA and interviews with officials of the Jemez, Zia, and Santa Ana Pueblos, and the Canyoncito Navajo Reservation generally show that many places of religious significance exist in and near the Ojito WSA. Specific site locations are not known to the lay members of the tribes because only tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature.

Traditional uses within the boundaries of this WSA by Native American populations are expected to continue.

REALTY ACTIONS

The western boundary of the Ojito WSA lies within a proposed 500-kV transmission line corridor that would serve the proposed New Mexico Generating Station. However, present information indicates that this transmission line could be accommodated entirely outside of the present boundaries of the WSA.

WILDLIFE

The Ojito WSA is included in the upper Rio Puerco Wildlife Habitat Management Plan. Several of the existing stock tanks are scheduled for development for waterfowl use. This would include cleaning and sealing of the tanks and protective fencing of shoreline vegetation.

Human use of the wildlife resource in the WSA includes predator calling, trapping, bird hunting, and observation incidental to hiking.

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work in the Ojito WSA is documented in the Wilderness Intensive Inventory (USDI, BLM 1980). In summary, this WSA includes a fenceline network, 11 earthen dams, 9 two-track ways (6 miles), evidence of illegal woodcutting, and scattered litter. It is important to note that the BLM considers the cumulative effect of these imprints upon the entire WSA when assessing naturalness, which is a function of the size of the unit and the number and distribution of the impacts.

The dams are widely scattered throughout the WSA and are well-buffered by the surrounding topographic relief and vegetative screening. Several are silted in. Ways are maintained solely by vehicular travel and would return to a natural condition if use were discontinued. Several ways along the east boundary have returned to an almost-natural condition since initial inventory. Evidence of illegal woodcutting and litter are visible in the southeastern portion of the WSA, concentrated along a two-track route.

As a whole, the WSA has been affected primarily by the forces of nature, and thus is assessed as exhibiting the wilderness characteristic of naturalness. Considering the Ojito WSA's close proximity to the populations of Albuquerque and Santa Fe, its natural condition is particularly outstanding.

Solitude

The BLM considers solitude as the state of being alone, removed from habitation, or in isolation. One may experience solitude in the Ojito WSA by wandering through the numerous steep-sided canyons, sandy arroyos, and rough, rocky terrain found throughout. This rugged topographic screening enhances opportunities for solitude by protecting users from the sights and sounds of others. The Ojito WSA possesses ample outstanding opportunities for a person to experience solitude.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality. The Ojito WSA contains the opportunity for a wide diversity of outstanding primitive recreation activities.

The varied landscape provides outstanding photographic and sightseeing potential. Highlights include large-mouth canyons, wide-cut arroyos, colorful rocky bluffs, flat highlands, and a viewscape of distant mountain ranges including the Sandias. Sightseeing opportunities also exist associated with the historic and prehistoric sites that occur in abundance. Hikers, campers, backpackers, and rockhounds are accommodated by the variety of terrain offered throughout the WSA. Opportunities for good bird hunting exist in the Ojito WSA.

Special Features

Overall, the Ojito WSA has a particularly high density and wide variety of special features. Although wildlife is not abundant, a diversity of species is present. Five rare plant species that are on the New Mexico State Heritage list of species of concern occur in the WSA .

The first species is Bigelow verbena-wildflower (Abronia bigelvoii), considered by W. C. Martin to be an endangered taxa in New Mexico. The second, blue grama cactus (Pediocactus papyracanthus), is found just to the north and east of the eastern part of the WSA. This cactus is found growing in clumps of blue grama and black grama in swales, and is a candidate for formal listing by the federal government as threatened. Others include moonpod-wildflower (Selinocarpus lanceolatus), fleabane-wildflower (Erigeron pulcherrimus), kentrophyta-wildflower (Astragalus kentrophyta var. neomexicana).

The cultural resource density within this WSA is particularly high, and includes Archaic, prehistoric, and historic sites (refer to Figures 3 and 4). Paleontological sites have also been found, but their full significance has not been determined as yet because excavation has not occurred. Further study is taking place. The diversity in terrain provides varied and striking visual features (refer to Figures 5 and 6).

Combined, the special features in the Ojito WSA provide exceptional scientific/educational potential.

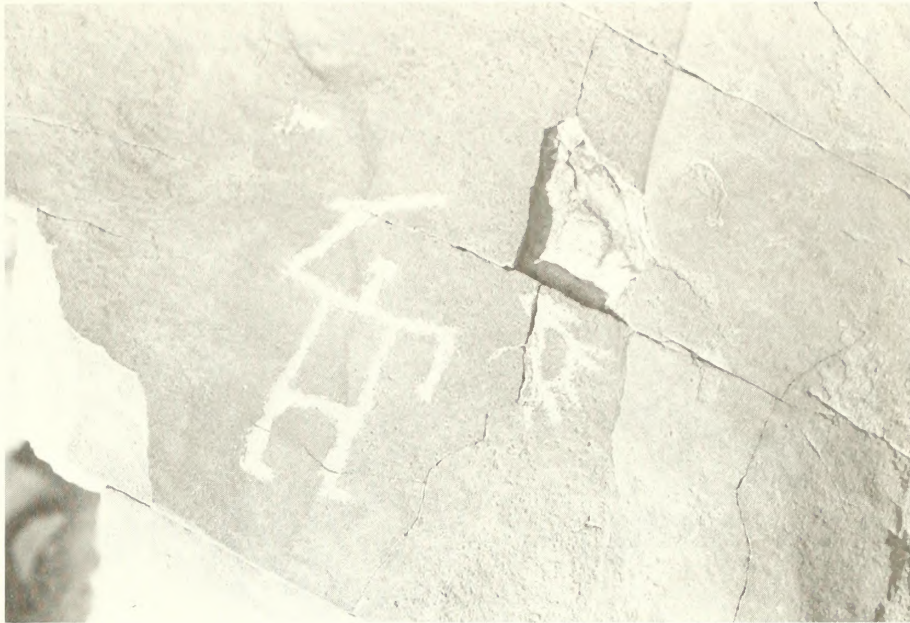
Multiple Resource Benefits

The Ojito WSA contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the BLM.

Diversity in the National Wilderness Preservation System

Ecotypes

The Ojito WSA, according to Robert G. Bailey (USDA, FS 1980) falls under the Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic.



Figures 3 and 4 - The Ojito WSA contains numerous sites of archeological significance.





Figure 5 - The scenic formations throughout the Ojito WSA owe their existence to the ancient sculptors, wind and rain.



Figure 6 - Natural ponderosa pine (very uncommon at the elevation of 6,000 feet) grows in pockets in the Ojito WSA. The trees intermingle with sculptured sandstone formations set in a very rugged landscape.

The two A. W. Kuchler ecotypes (1964) found in the WSA are described as follows:

Grass-Galleta Steppe. Total acres in the WSA are approximately 5,655 (48 percent of the WSA).

Juniper-Pinyon Woodland. Total acres in the WSA are approximately 6,264 (52 percent of the WSA).

Map 10 displays these ecotypes. Vegetation Map 3 (Section 2), breaks each ecotype into more refined site categories that are narrated in Table 3.

Distance from Major Population Centers

The Ojito WSA is within a one day drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census as a Standard Metropolitan Statistical Area. The WSA is within a 2-hour drive from the cities of Albuquerque or Santa Fe, two of the largest population centers in New Mexico.

MANAGEABILITY

To be recommended as suitable, the Ojito WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as state and private inholdings, valid existing rights, mineral leases, rights-of-way, topography, and the overall land ownership pattern.

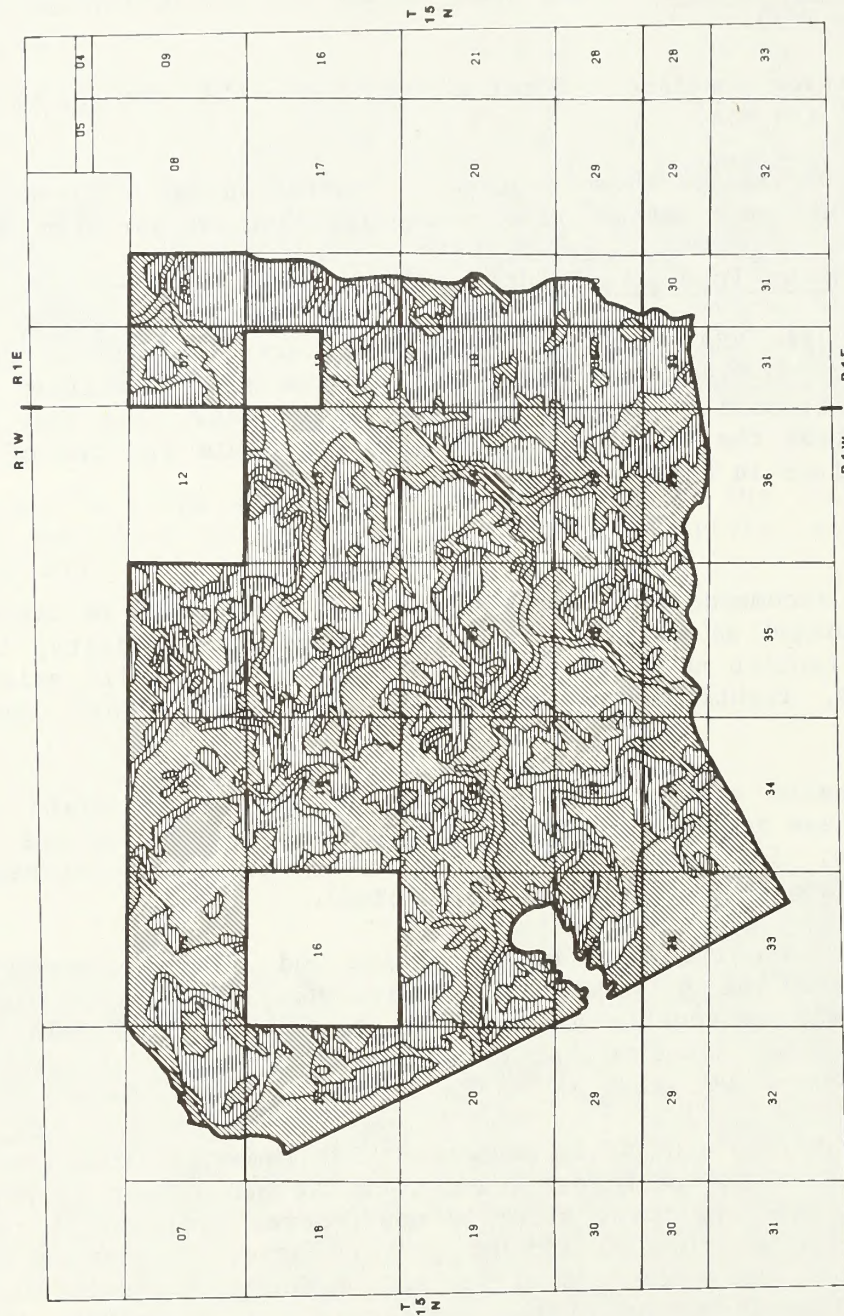
Reasonable access must also be guaranteed to state and private inholdings. These access needs would result in low levels of use incompatible with wilderness. In addition, the State of New Mexico has expressed a strong desire to exchange their inholdings (640 acres).

Ojito WSA contains no mining claims and only one pre-FLPMA oil and gas lease. Since the oil and gas resource has been assessed as moderate, exploration could reasonably be expected to occur, but could probably be accomplished without damaging the overall wilderness character of the Ojito WSA, since the pre-FLPMA lease is on the periphery of the WSA.

Manageability could be enhanced by removing approximately 1-1/4 sections located in the northeast portion of the WSA (refer to Map 1). This acreage is surrounded on three sides by non-federal land and is contiguous on the south with a quarter section of private land. Access to the private inholding crosses this northeastern parcel. Reducing the suitable acreage of the WSA (Map 1) would eliminate the quarter-section of private inholding and the associated need to cross the Ojito WSA to gain access to it. It would also eliminate the only pre-FLPMA oil and gas lease.

Manageability could be further enhanced if the acquisition of state-owned Section 16 (T. 15 N., R. 1 W.) were accomplished. This section exhibits wilderness values similar to the Ojito WSA, and is used predominantly for grazing.

MAP 10 ECOTYPES, OJITO WSA



BUREAU OF LAND MANAGEMENT

Overall, there is every reason to assume that Ojito WSA can be effectively managed to maintain its wilderness values over the long term.

SECTION 5

CONSULTATION COORDINATION

PUBLIC INVOLVEMENT OVERVIEW

This report has been prepared with public input obtained by large mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Considerable interest in the the management status of the Ojito WSA has been expressed by the public. The WSA's close proximity to the cities of Albuquerque and Santa Fe and the resultant ease of access for such a large percentage of New Mexico's population has been pointed out. The Ojito WSA's wide variety of special features, natural character, and opportunities for solitude and primitive and unconfined recreation were also noted.

Opponents of wilderness designation for the Ojito WSA discussed the effect of excluding it from possible future mineral exploration and development, the presence of human impacts, and possible limitations on ranch operations.

During the public comment period on the Albuquerque District Wilderness Draft Environmental Assessment (USDI, BLM 1983), public inputs were received on the Ojito WSA. Three inputs expressed opposition to wilderness designation. They cited high favorability for uranium, and moderate potential for oil, copper, silver, molybdenum and gold. One commentor felt the Ojito WSA contained too many man-made intrusions, while another expressed the opinion that the Ojito WSA's special values could be managed effectively without wilderness designation.

The majority of the inputs, 23 personal letters, favored wilderness designation. The availability of quality wilderness characteristics (particularly solitude and special features) so close to Albuquerque was repeatedly emphasized. The Ojito WSA's value for its "stark beauty" and sanctuary for raptors was mentioned. One input from a geologist expressed the opinion that mineral development potential was minimal within the Ojito WSA, with similar opportunities existing throughout the region.

Miscellaneous comments included a statement that one individual had taken more than 100 people to the Ojito WSA, each of whom was prepared to "speak up" for the Ojito WSA. The State of New Mexico anticipated no conflicts and encouraged immediate discussion on a land exchange. The Ojito WSA was noted as a high priority with the New Mexico Wilderness Study Committee.

SUMMARY OF SCOPING

Table 9 lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District Environmental

TABLE 9

OJITO
SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including This Alternative
Expand the WSA	This was not considered further because it would require consideration of lands not nominated for wilderness study and lands not protected by interim management.
Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impact was identified to livestock grazing, however, this issue will be discussed because of Statewide interest.
Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by BLM Wilderness Study Policy.
No Wilderness	Required by BLM Wilderness Study Policy.
Amended Boundary (reduce acreage by 134 acres)	This is the Proposed Action.
Issues Selected for Detailed Analysis	

Four issues of concern were identified for the Ojito WSA. These include moderate uranium, oil and gas, and geothermal potential, and high sand and gravel potential, fuelwood cutting, recreation off-road vehicle use, and wilderness values.

The Ojito WSA contains moderate potential for oil and gas, and uranium on 11,919 acres, moderate potential for geothermal resources on 1,093 acres and high potential for sand and gravel on 37 acres. Concerns regarding mineral potential include restrictions to mineral exploration under wilderness designation, as well as the potential impacts to the naturalness of the Ojito WSA resulting from mineral exploration if it is not designated wilderness.

Concerns were raised regarding the elimination of recreation off-road vehicle use under wilderness designation as well as the potential impacts to the naturalness of the Ojito WSA resulting for increased recreation off-road vehicle use.

Concerns were raised regarding the levels of non-permitted fuelwood cutting occurring in the Ojito WSA and its potential impact on the naturalness of the WSA.

The wilderness values issue is required by the BLM Wilderness Study Policy. The Ojito WSA is a very popular primitive recreation area. One of its major attractions is its extremely close proximity to the expanding Albuquerque population. Its diverse special values and close proximity have made it popular for utilizing as a "natural laboratory" for environmental education by local schools. Its varied visual resources are popular with artists and photographers. Other special values include paleontologic sites, abundant and diverse cultural sites, 6 rare plant species, wildlife habitat supporting golden eagle, red-tailed hawks, migrating waterfowl, mule deer, antelope, fox, bobcat and mountain lion.

Assessments. Unless otherwise shown in the table, issues related to forestry products, air quality, recreation, watershed, vegetation, visual resources, cultural resources, wildlife, Native American uses and education/research were also considered in the District Final EA's and because little or no environmental impacts were identified, issues resulting to these resources are not analyzed in this WAR.

SECTION 6

ALTERNATIVES AND IMPACTS

This section discusses three alternatives for the Ojito WSA: All Wilderness, Amended Boundary, and No Wilderness (manage under the existing plan).

ALL WILDERNESS ALTERNATIVE

Under the All Wilderness Alternative, the entire 11,919 acres of public land within the Ojito WSA would be recommended as suitable for wilderness designation.

Impacts to Wilderness Values

On any acreage designated as wilderness, the existing and potential uses would be regulated by the BLM's Wilderness Management Policy (1981). High quality wilderness values would be retained and protected over the long term by management under this policy. The Ojito WSA's existing natural character and the opportunities for solitude and primitive and unconfined recreation would be maintained, as well as its abundant special values.

Hiking, photography, and game bird hunting are very popular activities within the Ojito WSA. It is also frequently used for environmental study by local schools. Its close proximity to Albuquerque and its wide variety of special values make it ideal for such use. Special values include high scenic values, abundant and varied cultural resource sites, paleontologic sites, six rare plant species, wildlife habitat supporting migrating waterfowl species, golden eagles, red-tailed hawk, mule deer, antelope, fox, bobcat, and mountain lion.

Restricting surface disturbing and mechanized activities associated with ORV use, mineral exploration and fuelwood cutting would prevent increased access and provide long-term protection for a wide variety of existing natural resources.

Restricting road building also prevents the cultural modifications to naturalness which inevitably accompanies increased access including trash dumping, removal of natural vegetation, the creation of temporary camp sites, woodcutting and poaching. Those resources which would be maintained by restricting these activities include: 1. fragile soils and existing vegetation very susceptible to erosion, including 6 rare plants species; 2. current low levels of noise and human activity which protects existing raptor nest sites, scaled quail, mourning dove and non-game species nest sites; 3. current wildlife habitat for both non-game and game species; 4. current visual resources; 5. currently undisturbed cultural and paleontologic resources; 6. current "natural laboratory" setting; 7. current pinyon-juniper community.

Wilderness designation would also maintain through long-term protection, the natural setting upon which Native American uses are often based.

Under the All Wilderness Alternative, the long-term protection of Congressional designation would significantly benefit the wilderness resources in the Ojito WSA.

Impacts to Uranium, Oil and Gas, Sand and Gravel, and Geothermal Exploration

The Ojito WSA exhibits moderate favorability for both uranium, and oil and gas. However, the total lack of mining claims, and the small number of active oil and gas leases (4), appear to indicate low current interest in development of these resources. Sand and gravel have been assessed as exhibiting high potential on 37 acres and low potential for the remainder of the WSA. Considering the substantial sand and gravel resources in the region, little demand is anticipated for those commodities located within the boundaries of the Ojito WSA. Moderate geothermal potential on 1093 acres is not considered adequate to support commercial energy production. (Refer to Table 5 and Maps 5 through 8). However, because of the assessment of moderate favorability for oil and gas, uranium and geothermal resources, it is reasonable to assume that mineral exploration would be pursued.

Designating the Ojito WSA as wilderness would withdraw it from appropriation under the mining laws and from leasing under the mineral leasing laws, subject to pre-FLPMA oil and gas valid existing rights. As economic conditions change, the development of the Ojito WSA's uranium, oil and gas and geothermal resources may become attractive. The inability to gain access could impact mineral exploration in the long term.

Impacts to Recreation Off-Road-Vehicle (ORV) Use

ORV use includes two-wheel, three-wheel, and four-wheel vehicles. Under the All Wilderness Alternative no vehicular access would be allowed on 6 miles of vehicular ways. This would preclude backcountry riding, vehicle camping, those who rely heavily on vehicular access in order to hunt, as well as motocross racing.

This would eliminate the option to use a race course traditionally used for the annual "Oh-My-God-100" motocross race. This is currently their preferred race course and would necessitate the expenditure of additional time and dollars, by both the motocross club as well as the BLM, in order to locate a course elsewhere within the RPRA. The race has been held on one alternate site outside the Ojito WSA, but it is not the club's preferred site.

Impacts to Fuelwood Cutting

Instances of non-permitted fuelwood cutting in the Ojito WSA have accelerated considerably. The pinyon-juniper communities in several small areas have been depleted to the extent that the regeneration of this biological community has been threatened. Wilderness designation would provide a powerful administrative tool which would curtail this trend, creating a beneficial primary impact to the pinyon-juniper community, as well as beneficial secondary impact to the wildlife species dependent on that community.

Impacts to Livestock Grazing

Grazing would continue at the approximate levels existing at the time the area enters the wilderness system, however, livestock operations in the Ojito WSA would be affected by wilderness designation. These effects may result from limitations imposed on the maintenance of 4 small dirt tanks with access by permit. Although grazing is permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, and location of new improvements may occur in order to protect wilderness characteristics. Casual use of vehicles for inspection or repair of existing facilities would be precluded. Wilderness designation would also hinder the effective use of already limited time to tend to weekend ranching operations.

AMENDED BOUNDARY ALTERNATIVE (Proposed Action)

Under this alternative, 11,297 acres of public land within the Ojito WSA would be recommended for wilderness designation (refer to Map 1). The amended boundary would exclude 622 acres of public land in the northeast portion of the WSA for manageability reasons.

Impacts to Wilderness Values

If the area within the amended boundary is designated wilderness, all existing and potential uses would be managed under the BLM's Wilderness Management Policy (1981). The small reduction in acreage would not significantly impact existing wilderness values. Impacts would be essentially the same as the All Wilderness Alternative, although naturalness would be impacted or the 622 acres excluded. In addition, this modification would enhance the overall manageability of the wilderness resource.

Impacts to Uranium, Oil and Gas, Sand and Gravel, and Geothermal Exploration

Impact to mineral exploration would be the same as stated in the All Wilderness Alternative except for 622 acres in the northeast corner of the WSA, which would be available for mineral exploration. This reduction would eliminate conflicts with the only pre-FLPMA oil and gas well, as well as two-thirds of the sand and gravel resource.

Impacts to Fuelwood Cutting

Impacts to fuelwood cutting would remain the same as the All Wilderness Alternative. The 622 acres excluded contain very scattered pinyon-juniper stands.

Impacts to Recreation Off-Road Vehicle (ORV) Use

Impacts to recreation off-road vehicle (ORV) use would remain essentially the same as the All Wilderness Alternative. However, ORV use would continue on the 622 acres excluded.

Impacts to Livestock Grazing

Impacts to livestock grazing would be the same as those stated in the All Wilderness Alternative.

NO WILDERNESS ALTERNATIVE

In the Albuquerque District Wilderness Draft Environmental Assessment, the Wilderness Analysis Report for this WSA (Appendix D) included three alternatives: All Wilderness, Amended Boundary, and No Action. Since the Draft's publication in March 1983, a comprehensive land use planning effort was initiated in the Rio Puerco Resource Area. This effort is called a Resource Management Plan (RMP). Alternatives in the Draft Rio Puerco Resource Management Plan (USDI BLM 1985) and include special designation for all or part of this WSA. As a result, the No Action Alternative for this WSA was changed to the No Wilderness Alternative.

Until Congress makes its decision on wilderness designation, the WSA will be managed under the Final Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1979, amended 1983). If Congress designates it as wilderness, the WSA will be managed under the Wilderness Management Policy (USDI, BLM 1981).

If the WSA is not designated as wilderness, it will be managed under the No Wilderness Alternative, which would involve management under other than wilderness policy. Management would follow the guidelines of the approved Rio Puerco RMP.

The RMP is expected to be approved in late 1985 while the wilderness study process is still underway. Therefore, the RMP decision concerning this WSA may be incorporated into the Wilderness Study Report to be written later in this process. The tentative RMP proposal for the Ojito WSA currently emphasizes management of the scientific, educational, and interpretive potential of the following values: rare plant species, cultural resources, paleontological sites, wildlife, visual resources, and semi-primitive non-motorized recreation.

If the approved RMP does not include special designation for any portion of the Ojito WSA, the WSA would be managed under the No Wilderness Alternative according to multiple use concepts without stressing the values listed above. The most probable uses of the Ojito WSA would be livestock grazing, mineral exploration, ORV use, and fuelwood cutting.

Mineral exploration would most likely include upgrading of existing vehicular ways, the creation of additional access routes, drilling operations and possibly seismic blasting. The Ojito region is currently very popular for recreational ORV activity and both legal and illegal use would reasonably be expected to increase. Recreational ORV use could be expected to increase significantly because of the Ojito WSA's close proximity to Albuquerque and Santa Fe, and the population expansion anticipated for these metropolitan areas. Upgrading of existing vehicular ways and the creation of additional

access routes would likely occur in association with livestock grazing, and unpermitted fuelwood cutting. Unpermitted fuelwood cutting would likely accelerate.

Impacts to Wilderness Values

Anticipated mineral exploration, increased ORV activity, increased unpermitted fuelwood cutting and greater use of motorized vehicles would result in disruption of wildlife habitat, the deterioration of visual values, cultural and paleontologic resources, vegetation and soils, as well as reduce the opportunity to experience solitude or primitive and unconfined recreation. Over time, the impacts could be expected to significantly reduce naturalness.

The WSA's soils and vegetation are very susceptible to erosion and thus very sensitive to increased motorized activity. They are generally unsuitable for successful application of rehabilitative management practices such as range reseeding or earthen pond construction. This would have a primary impact on the Ojito WSA's broad spectrum of habitats supporting 6 rare plant species, as well as a wide variety of wildlife species. Existing populations would diminish.

Increased access, and thus increased activity and noise levels would disrupt the nesting season for raptors who utilize the Ojito WSA's bluffs and cliffs for nesting sites. Scaled quail, morning dove, and non-game bird species utilize grasses and shrubs along the Ojito WSA's arroyos as well as rolling grasslands. Nesting seasons extend from February to August, depending on the particular species, and the birds are particularly susceptible to increased activity during this time. Not only will habitat be destroyed and nesting activities interrupted, but total nest abandonment is likely. Increased activity and habitat damage could be expected to impact all game and non-game species and diminish the existing wildlife populations. Overall, the impacts to wildlife under this alternative would be significant because of the extensive ecosystem modifications and increased activity that will likely occur.

Under this alternative, direct impacts to cultural and paleontologic resources from ORV use, although slight, would increase through time as user demand grows. Indirect impacts (the effects not directly caused by vehicles themselves) contribute substantially to loss of cultural and paleontologic resources by providing relative ease of discovery, access, tool and equipment transport, artifact and specimen transport, and speed of action. These indirect impacts would increase dramatically under the No Wilderness Alternative.

Primitive and unconfined recreation relies on the resource base of a predominantly natural environment, which would not exist under this alternative. The Ojito WSA is one of the areas closest to Albuquerque and Santa Fe that provides a low elevation ecosystem where such a high diversity of primitive recreation opportunity exists. This lower elevation opportunity is often available for use when higher elevation lands are inaccessible. This extremely popular primitive recreation opportunity would be significantly impacted under the No Wilderness Alternative.

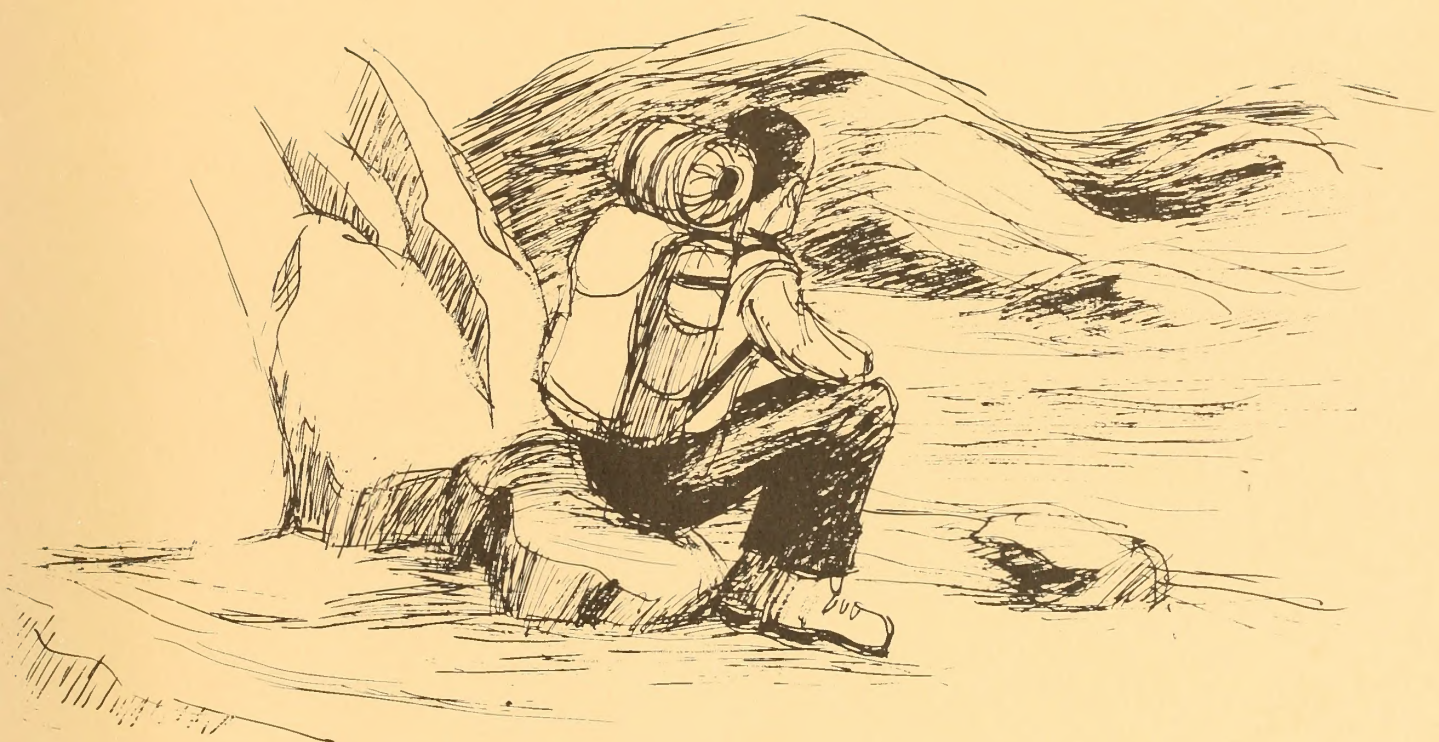
The natural setting supporting the special features, including paleontologic and cultural sites, high visual resources, 6 rare plant species, and a variety of wildlife species would be subject to increased surface disturbance and vehicular travel. Wildlife species include migrating waterfowl, mule deer, antelope, gray fox, bobcat, mountain lion, golden eagles and red-tailed hawks. Management under the No Wilderness Alternative would significantly degrade the Ojito WSA's potential for use as a "natural laboratory", by degrading this unique cluster of natural phenomena so accessible to the populations of Albuquerque and Santa Fe.

The natural settings on which Native American uses are often dependent would be subject to increased surface-disturbing activities. The impacts to Native American uses of this WSA are unquantifiable, because of lack of access to proprietary information held by the various pueblos.

Not curtailing additional access and ORV activity would ultimately reduce the high visual quality of Ojito WSA. ORV activity, both authorized and unauthorized, is expected to accelerate in the Ojito WSA. Since additional roads predispose increased surface disturbance and increased cultural modification (such as trash dumping, removal of natural vegetation, creation of temporary camps, poaching, and fuelwood cutting) of the visual resources, a largely expanded road network (particularly that caused by unauthorized use), tends to shift visual resources from high scenic quality A & B, to a lower scenic quality of B and C.

To date no protective designation has been approved for the Ojito WSA. The cumulative effect of this lack of protective designation and non-wilderness management practices would be to degrade or eliminate the Ojito WSA's wilderness characteristics. Under this alternative, the impacts to wilderness values could be significant over the long term because protective management of the WSA would not be ensured through Congressional designation.

If the Ojito WSA were to be approved in the RMP for special management, it could still be subject to mineral exploration. In addition, the RMP is administrative in nature, and subject to continual review, updating and amending. It would not provide the long-term assurance of maintaining the Ojito WSA's wilderness characteristics that Congressional designation would.



LAS CRUCES DISTRICT

Wilderness Analysis Reports

APPENDIX 9

ANTELOPE WSA (NM-020-053)

I. GENERAL DESCRIPTION

A. Location

The Antelope Wilderness Study Area (WSA) is located approximately 6 miles southeast of San Antonio, New Mexico. The WSA is bound on the west by the Bosque del Apache National Wildlife Refuge and on the east by the White Sands Military Reservation.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Cerro Colorado, San Antonio SE, Little San Pasqual Mountain, and San Marcial, New Mexico quadrangles. All four of these maps are at the 7½-minute scale.

B. Climate and Topography

The Antelope WSA is characterized by a semiarid climate with mild winters and hot summers. Average annual precipitation is 8 to 10 inches, with more than half of the moisture occurring during July, August, and September. The average annual temperature is 60°F, with extremes at 5° below zero and 110°F.

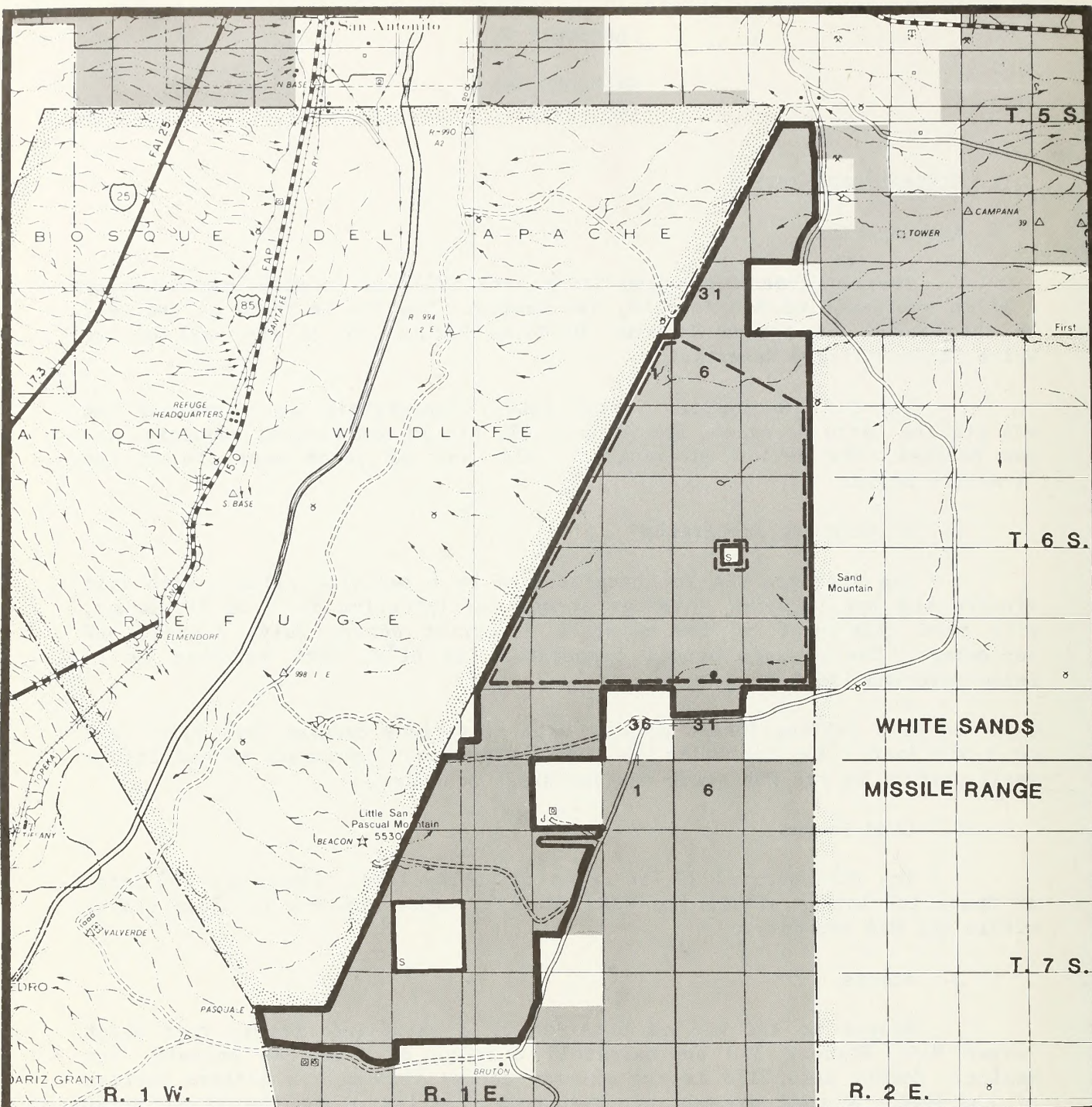
This WSA is a rolling desert prairie with elevations ranging from 4,767 feet to 5,065 feet. The foothills of Little San Pasqual Mountain extend into a small portion of the WSA along its southwest boundary.

C. Land Status

The WSA contains 20,710 acres of public land. There are 680 acres of State inholdings within the WSA boundary. (See Map 9-1 for land status within the WSA boundary.)

D. Access

Access to the WSA is provided by a maintained County road which leaves U.S. Highway 380 approximately 6 miles east of San Antonio, New Mexico. County Road 2113 is the primary access road to the eastern portion of the WSA. A road extends approximately 3 miles along the fence which separates the WSA from the Little San Pasqual Wilderness and provides access to the northwestern edge of the WSA. Unimproved ranch access routes traverse the WSA from east to west in three locations.



ANTLOPE WSA (NM-020-053)

- WSA Boundary
- - Amended Boundary (Proposed Action)
- BLM
- State

State ownership is identified only inside the WSA boundary.

Scale: 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces District, January 1985.



MAP 9-1
LAND STATUS

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Action/No Wilderness
°Manage 20,710 acres as wilderness.	°Manage 9,892 acres as wilderness.	°Manage 20,710 acres without wilderness protection.
-Close 7 1/2 miles of vehicle trails.	-Close 3 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to maintain 2 3/10 miles of buried pipeline.	-Require permits for vehicular access to maintain 1 1/2 miles of buried pipeline.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-20,710 acres would be closed to oil and gas leasing and mining claim location.	-9,892 acres would be closed to oil and gas leasing and mining claim location.	-20,710 acres would be open to oil and gas leasing. Exploration and development are unlikely because of low potential.
-Reasonable access would be granted to WSMR personnel to recover unmanned drones or missile debris which might impact in the area.	-Reasonable access would be granted to WSMR personnel to recover unmanned drones or missile debris which might impact in the area.	-Access would be granted to WSMR personnel to recover unmanned drones or missile debris which might impact in the area.
-Attempts would be made to acquire 680 acres of State land within and adjacent to the WSA.	-Attempts would be made to acquire 40 acres of State land within the WSA.	-No special attempts would be made to acquire State and private lands.
	°Manage 10,818 acres without wilderness protection.	
	-10,818 acres would remain open to oil and gas leasing. Exploration and development are unlikely because of low potential.	
	-4 1/2 miles of vehicle trails would remain open.	
	-Access would not be limited to 1/2 mile of pipeline.	

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (20,710 acres)	Wilderness protection would maintain the area's existing wilderness values and would supplement and compliment the adjacent Little San Pasqual wilderness area.
Amended Boundary (9,892 acres recommended suitable, 10,818 acres recommended nonsuitable) (Proposed Action)	Wilderness protection would maintain the area's highest wilderness values and would supplement and compliment the adjacent Little San Pasqual wilderness area.
No Action/No Wilderness (20,710 acres)	Rangeland management activities and additional vehicular access routes would reduce naturalness in the long-term.

II. EXISTING RESOURCES

A. Geology

The Antelope WSA is situated within the Rio Grande rift and is within the Basin and Range physiographic province. Specifically, it is located on the western edge of the Jornada del Muerto Basin. The northern portion of the WSA contains predominantly Tertiary valley-fill sediments of the Santa Fe formation. The southern portion of the WSA contains mostly Quaternary alluvium and bolson deposits, although there is some exposure of Permian San Andres limestone in the extreme southwestern portion of the WSA.

B. Water

The northern part of the Antelope WSA is located in the Rio Grande Basin and the southern half drains into the Jornada del Muerto, a closed basin. Several ephemeral streams drain the WSA; however, because the area is nearly level and has sandy soils which have high infiltration rates, there is little runoff. Ephemeral stream flow occurs in response to summer thundershowers.

Ground water occurs primarily in alluvium and bolson deposits at depths of 55 to 400 feet. It also occurs in the Datil formation, the Manzano group of the Yaso formation, and the Santa Fe group. There are little water quality data available, but what does exist indicates that sulfate levels exceed the recommended limit for livestock and wildlife as established by the National Academy of Sciences (BLM 1980).

C. Soils

Approximately 90 percent of the WSA is characterized by sandy soils on nearly level slopes. Surface textures range from fine sands to fine sandy loams. Subsoil and substratum textures range from sands to loams. There is a small area just east of Little San Pasqual Mountain that has a loamy soil with textures ranging from loam to clay loam. The sandy soils have a very high soil blowing hazard. These soils are well drained and have slow runoff.

D. Vegetation

1. General

The vegetation and associated range sites within the Antelope WSA consist of seven major types:

ANTELOPE

Vegetation Type	Range Site	Federal Acres
Broom dalea	Deep sand, Sandy	10,312
Sand sagebrush	Sandy	5,022
Creosote	Gravelly, Loamy, Limestone hills	1,637
Mesquite	Sandy, Loamy	1,631
Mid grass	Loamy	993
Yucca	Sandy	836
Short grass	Sandy	279

The broom dalea vegetation type occurs on approximately half of the WSA. This type also includes mesquite, snakeweed, sand sagebrush, and littleleaf sumac. The common grasses are fluffgrass and dropseeds.

The sand sagebrush type occupies about one-fourth of the area. Other common species include yucca, snakeweed, black grama, and dropseeds.

Creosote areas are dominated by creosote, tarbush, and snakeweed. Other shrubs in the creosote vegetation type include Mormon tea and mesquite. Predominant grass species include fluffgrass, threeawns, dropseeds, bush muhly, black grama, and galleta. This vegetation type has a high proportion of annuals; the most common being annual snakeweed, common bahia, buckwheats, spectaclepod, sixweeks grama, sixweeks threeawn, and windmill grass.

The mesquite vegetation type also contains Mormon tea, snakeweed, fourwing saltbush, and sand sagebrush as associated shrubs. Common grasses are black grama, fluffgrass, galleta, and dropseeds.

The mid grass vegetation type is dominated by alkali sacaton in the higher rangeland condition categories, but contains higher proportions of burro grass and snakeweed in the lower rangeland condition categories.

The yucca vegetation type contains soaptree yucca, a tree-like species several meters tall. Other common shrubs are snakeweed and Mormon tea. Black grama, galleta, threeawn, and dropseeds are the most common grasses.

Short grass, the smallest vegetation type, is dominated by black grama in some places and by dropseeds in others. Additional common short grass species are ring muhly, bush muhly, galleta, and threeawns. Scattered individuals of snakeweed, sand sagebrush, and other shrubs can also be found.

2. Threatened or Endangered Plant Species

Spellenberg (1977) and the New Mexico State Heritage Program (1983) do not list any known occurrences of Federal or State-listed plant species in the Antelope WSA. However, the following species may occur in the WSA.

Species: Coryphantha duncanii .
Status: State of New Mexico biologically threatened; Federal candidate species.
Habitat: Limestone hills.

Species: Cryptantha paysonii
Status: Selected by the New Mexico State Heritage Program as a special concern element.
Habitat: Common in limestone areas associated with gypsum.

Species: Hymenoxys vaseyi
Status: Selected by New Mexico State Heritage Program as a special concern element.
Habitat: Found on Little San Pasqual Mountain in the Bosque del Apache National Wildlife Refuge.

E. Wildlife

The Antelope WSA supports approximately 155 wildlife species, which are comprised of 35 mammal species, 50 reptile and amphibian species, and 70 resident and migratory bird species. The most common wildlife species within this WSA are coyotes, black-tailed jackrabbits, desert cottontails, pronghorn, raptors, and various songbirds.

The Antelope WSA contains two major Standard Habitat Sites (SHS's). These SHS's are described briefly below.

1. Shrub Pediment

The shrub pediment SHS is a mixture of short grass, mid grass, tall grass, and yucca subtypes. Yucca types can be found throughout the SHS with it being a dominant plant aspect wise in some places. The grasses occur mostly in the lower lying edges of the Jornada Plains where disturbance by humans or livestock seem to be most evident. Species diversity appears low for the SHS, possibly due to livestock pressure and lack of good cover.

2. Creosote Hill

The principal areas of the creosote hill SHS are the rolling upland hills east of the Rio Grande. Ground cover is sparse when creosote grows in nearly pure stands. This area has many arroyos that run toward the river.

ANTELOPE

F. Visual

The WSA is an expansive upper Chihuahuan desert environment characterized by little topographic or landscape diversity. The line of the landform is horizontal; colors are generally tans and muted greens. The Antelope WSA's location in a large desert bolson affords wide vistas of distant mountain ranges to the east and west of the WSA.

The WSA is in a Visual Resource Management (VRM) Class IV.

G. Cultural

A total of five prehistoric sites have been recorded in the Antelope WSA. They consist of lithic and ceramic scatters usually with associated hearths. These sites were located during a survey of three sections of the WSA associated with a Class II survey of the Jornada Resource Area in 1976 and a survey for a proposed pipeline in 1981. Personal communications with individuals who are familiar with the area have revealed a number of unrecorded sites in the Antelope WSA. A multicomponent Paleo-Indian site is located in the eastern portion of the WSA and Archaic sites are located in blowouts and on ridges throughout the WSA. The sand covering the WSA probably conceals numerous sites.

H. Air

Generally, the quality of air within the Antelope WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

The locations of lands under mineral lease are shown on Map 9-2.

1. Energy Minerals

As of December 1, 1984, there was one post-Federal Land Policy and Management Act (FLPMA) oil and gas lease in the WSA.

a. Oil and Gas

There are no known oil and gas occurrences and no test wells have been drilled within the WSA. Test wells have been drilled 25 miles northeast, 5 miles west, and 20 miles south of the WSA. All of these wells are dry holes. Although the Jornada Basin in general is considered to have low to moderate potential for the occurrence of oil and gas, the WSA's presence within the Rio Grande rift suggests that any oil and gas that may have been present is now gone because of faulting associated with the rift. The oil and gas potential in the Antelope WSA is low.

b. Geothermal

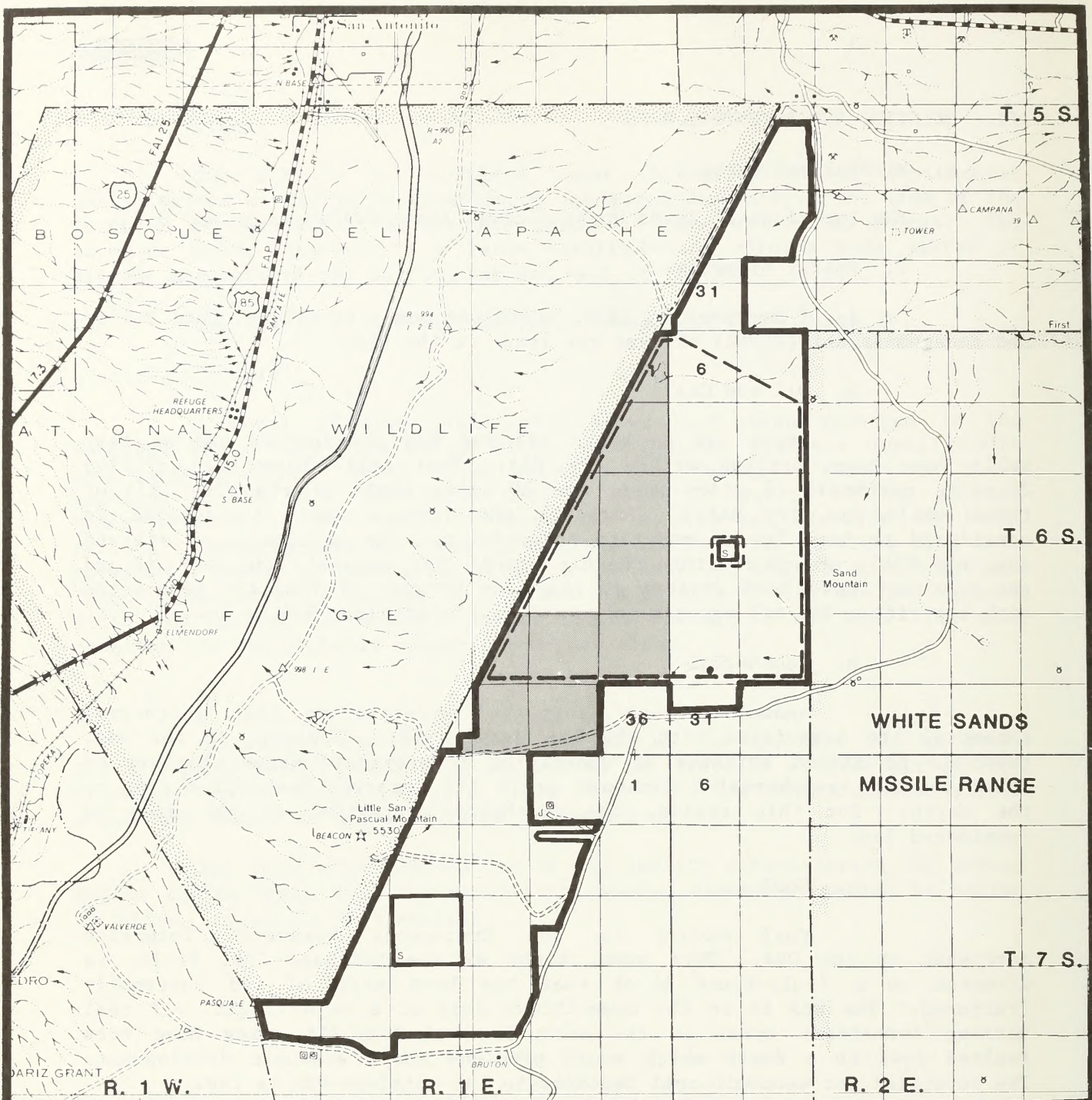
Anomalous heat flows and moderate to high geothermal potential are associated with the Rio Grande rift. However, in the WSA, there is no direct evidence of underlying or proximate magma chambers or other positive geothermal indicators as in the Socorro, New Mexico area to the north. For this reason, the geothermal potential of the area is considered low.

c. Coal

Coal occurs in the Cretaceous Mesaverde formation northeast of the WSA. This area, known as the Carthage Coal Field, is situated on a fault-bound block that has been uplifted and internally fractured. The WSA is on the down-thrown side of a major fault. If coal bearing formations exist in the subsurface of the WSA, they have been faulted down to a depth which would preclude their economic development. The potential for economic coal deposits in the Antelope WSA is low.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA. There is no evidence of locatable mineralization in the WSA. The geologic environment in the WSA is not favorable for the occurrence of mineralization.



ANTELOPE WSA (NM-020-053)

MAP 9-2

- WSA Boundary
- - - Amended Boundary (Proposed Action)
- BLM
- State

State ownership is identified only inside the WSA boundary.

Scale: 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces District, January 1985.

MINING CLAIMS AND MINERAL LEASES*

□ Post-FLPMA Oil and Gas Leases

FLPMA was passed October 21, 1976.

*No mining claims were recorded with the BLM within the WSA as of September 17, 1984.

MINERAL RESOURCES POTENTIAL OF THE ANTELOPE WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Mesozoic and Paleozoic continental and marine sedimentary rocks within the Jornada del Muerto Basin	Low	--
Geothermal	Possible igneous plutons associated with the Rio Grande rift	Low	--
Coal	Cretaceous Mesaverde group continental margin sediments within the vicinity of the Carthage coal field	Low	--

Note: *Acreage was not calculated for areas with low potential.

B. Livestock Grazing

1. Allotments

Parts of two grazing allotments are within the Antelope WSA. The entire area is suitable for livestock grazing. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Sand Mountain 1285	21,878	1,982	14,090	64%
San Pasqual 1272	13,012	1,860	6,620	51%
TOTAL			20,710	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock and forage condition, availability of livestock water, supplementing salt, and routine maintenance on fences and pipelines. Pickup trucks are used for most of the daily ranch operations in the WSA. Because there are no natural water sources in the WSA, livestock waters must be checked frequently to ensure the availability of water.

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EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Sand Mountain 1285	2 3/10 miles pipeline and 2 troughs	T. 6 S., R. 1 E., Sections 24 and 25 T. 6 S., R. 2 E., Section 19
	2 miles pipeline and 1 trough	T. 6 S., R. 2 E., Sections 5 and 6
San Pasqual 1272	2 miles fence	T. 7 S., R. 1 E., Sections 20 and 21
	½ mile pipeline and 1 trough	T. 7 S. R. 1 E., Section 21

Boundary Fence:

Sand Mountain 1285 and San Pasqual 1272 1½ miles

Note: ^{a/}Information shown in tables reflect only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

C. Recreation

Existing recreational use of the area is low because of the WSA's general lack of recreational attractions. Dove and quail hunting accounts for most existing use with some vehicular sightseeing occurring along the improved road along the eastern side of the WSA.

D. Wildlife

The WSA contains one umbrella type game water facility which was installed to provide water primarily for pronghorn.

E. Other -- White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone

The Antelope WSA is located within the WSMR Aerobee 350 Safety Evacuation Zone established by Memorandum of Understanding (MOU) between the U.S. Army and the BLM in 1973. This MOU specifies periodic evacuation of the Safety Zone and right of access to recover objects which impact in the area due to its proximity to targeting locations within the missile range proper.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Antelope WSA generally appears natural. However, the quality of naturalness is reduced by human impacts inside and adjacent to the WSA.

Human impacts which negatively impact the quality of naturalness within the WSA consist of rangeland developments and vehicle access routes. There are $7\frac{1}{2}$ miles of vehicle routes, $4\frac{4}{5}$ miles of buried plastic pipeline, 4 drinking troughs, and $3\frac{1}{2}$ miles of barbed wire fence inside the WSA.

Human impacts outside the WSA boundaries also affect the feeling of naturalness in the Antelope WSA because of the lack of topographic or vegetative screening. These impacts include: 1 mile of overhead transmission line cherry-stemmed 1 mile into the southeastern portion of the WSA; a large microwave tower adjacent to the eastern boundary of the WSA; large storage tanks, corrals, and windmill towers in two locations on the eastern boundary of the WSA; and 13 miles of barbed wire fence with orange metal posts along the western boundary of the WSA.

b. Solitude

The location of the WSA in an expansive desert environment and the current lack of visitor use in the area compensate for the lack of topographic or vegetative screening and result in outstanding opportunities for solitude. Opportunities for solitude are greatest in the central portion of the WSA which is bordered by the Little San Pasqual Wilderness on the west and by White Sands Missile Range (WSMR) on the east. A series of low mountains and sand hills on WSMR provide screening from activities occurring east of this portion of the WSA. The quality of solitude is reduced in the northern and southern part of the WSA by a relatively narrow configuration and the presence of a maintained county road which forms portions of the eastern and southern boundary of the WSA. Traffic along this road, the road which forms 3 miles of the northeastern portion of the WSA, and vehicles used in ranching operations are visible over a wide area of the WSA due to the lack of topographic or vegetative screening in the area.

Low altitude military training flights also impact solitude, but because they are intermittent and of short duration, these impacts would not be significant.

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c. Primitive and Unconfined Recreation

Although the WSA offers good dove and quail hunting, opportunities for other types of recreation are limited and opportunities for primitive recreation are not outstanding.

2. Special Features

The WSA provides pronghorn habitat and winter habitat for raptors.



Overview of the Antelope WSA with San Pasqual Mountains in the background.

3. Multiple Resource Benefits

Congressional designation of the area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Antelope WSA as being in the Chihuahuan Desert Province. The potential natural vegetation is grama-tobosa shrubsteppe.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours driving time, Las Cruces, New Mexico lies within 3 hours driving time, and El Paso, Texas within 4 hours driving time of the WSA.

B. Manageability

Factors which potentially affect the manageability of the Antelope WSA include: land ownership patterns, rangeland developments, the presence of the area in the WSMR Aerobee 350 Safety Evacuation Zone, the lack of natural barriers to existing off-road vehicle use, and the character of the opportunities for solitude in the area.

The WSA contains 680 acres of State inholdings. Reasonable access will be granted by BLM to the owners of these inholdings. This access is not expected to result in significant manageability problems.

The western boundary of the WSA is adjacent to the U.S. Fish and Wildlife Service's Little San Pasqual Wilderness and 5 miles of the eastern boundary of the WSA is formed by the WSMR. This enhances the manageability of the WSA by reducing the possibility of conflicting or nonwilderness uses on lands adjacent to the WSA.

In the southeastern portion of the WSA, private and State lands surrounded on three sides by the WSA contain a large windmill, storage tank, and a large corral. There is also an overhead electric transmission line which has been cherry-stemmed approximately 1 mile into the WSA. While these impacts are not technically inside the WSA, because of the lack of topographic or vegetative screening, they affect the naturalness and opportunities for solitude of the southeastern portion of the WSA.

The WSA contains 4 4/5 miles of buried plastic pipeline. Required vehicular access to maintain the grandfathered portions of the pipelines and to ensure that livestock drinking tanks contain water would be allowed under wilderness management. These access needs would affect solitude because of the frequency of required access to check on the availability of livestock water. This would affect large areas in the WSA because of the extreme visibility in this featureless desert grassland.

The WSA lies within the WSMR Aerobee 350 Safety Evacuation Zone that must be periodically evacuated during missile firings. The

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availability of the Safety Zone is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Zone to recover missile debris and pilotless drones. These access needs are not expected to create serious wilderness management problems because the debris, in most cases, could be removed within the constraints of wilderness management. In those cases where recovery impacts wilderness values, the impacts would not be long-term due to the sandy character of the WSA. The military's need to periodically evacuate the area for safety reasons would slightly complicate wilderness management.

The open landscape and existing use patterns in the area would make it difficult to eliminate vehicular use under wilderness management. Dove and quail hunters use the vehicle routes throughout the WSA for access during hunting season. Physically closing vehicle routes would not be effective because of the lack of natural barriers to vehicular travel. If signing and public education failed to alter existing use patterns, it would be necessary to fence portions of the WSA to enforce the prohibition of motorized uses.

Managing the WSA to preserve opportunities for solitude would be difficult because the lack of topographic and vegetative screening and the narrow configuration of portions of the WSA result in impacts to solitude from activities occurring outside the WSA. These activities, primarily normal traffic along County Road 2113 and increased traffic during hunting season, would reduce opportunities for solitude in the WSA.

While these potential manageability problems are not insurmountable, they would require careful monitoring and a significant amount of management attention to ensure that wilderness values are maintained.

A boundary adjustment would improve the naturalness, manageability, and opportunities for solitude in the Antelope WSA. A boundary adjustment excluding the narrow northern and southern portions of the WSA would eliminate the majority of inholdings, access routes, and impacted areas in the Antelope WSA.

Lands that should be considered for acquisition under the All Wilderness and Amended Boundary Alternatives are legally described below.

<u>Legal Description</u>	<u>Acres</u>
Additional Lands to be Acquired Under the All Wilderness Alternative	
T. 7 S., R. 1 E., Section 16, All	640
Lands to be Acquired Under the Amended Boundary Alternative	
T. 6 S., R. 2 E., Section 19, SE¼SE¼	40

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

The New Mexico Wilderness Study Area Proposals (BLM 1980) recommended 20,710 acres of the Antelope intensive inventory area as a WSA. During the public comment period on this recommendation, comments were received supporting and opposing WSA status of the area.

Sixteen personal letters favored WSA status of Antelope. These letters were of a general nature and supported WSA status because of the area's naturalness, opportunities for solitude and recreation, and supplemental values. Form letters and petitions received during the comment period listed Antelope as one of the areas supported for wilderness review.

Four personal letters opposed WSA status of Antelope. Two of these letters contained specific reasons why the area lacked outstanding opportunities for solitude. Other supporting reasons included: the area did not appear natural, lack of supplemental values, resource conflicts, and lack of manageability.

After a reevaluation of the Antelope area based on these comments and the area's wilderness characteristics, the BLM released the entire Antelope area from further wilderness review in the New Mexico Wilderness Study Area Decisions (BLM 1980) because it lacked outstanding opportunities for solitude or recreation.

This BLM decision was protested to the BLM New Mexico State Director. The State Director denied the protest and his decision was appealed to the Interior Board of Land Appeals (IBLA).

In reviewing the decision, the IBLA states that the BLM improperly decided not to consider the scenic vistas attributable to the contiguity of the Little San Pasqual Wilderness in determining the opportunities for solitude. The IBLA then reversed the BLM decision denying the protest and remanded Antelope to the BLM as a WSA. As a result of the ruling, Antelope is a WSA and its suitability for wilderness designation was evaluated in the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984).

During the public comment period on the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984), 36 personal inputs with 37 signatures were received which favored wilderness designation of the Antelope WSA. In addition, 29 personal inputs with 42 signatures, 7 form letters with 15 signatures, and 2 petitions with 147 signatures opposed wilderness designation of the Antelope WSA.

Comments favoring wilderness designation most often noted the need to include areas of "open, expansive Chihuahuan Deserts" in the National Wilderness Preservation System, the value of the Antelope WSA as an addition to the adjacent Little San Pasqual Wilderness, and the lack of resource conflicts if the area were designated wilderness. Commentators also stated

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that the draft report failed to consider boundary adjustments to improve wilderness values and manageability, and that the relationship of the Antelope WSA to the Little San Pasqual Wilderness was inadequately addressed.

As noted in the public comments, the draft report failed to consider a logical amended boundary. An Amended Boundary Alternative has been included in this Wilderness Analysis Report.

Comments opposing wilderness designation of the Antelope WSA primarily noted that the Little San Pasqual was enough wilderness for this part of New Mexico.

Many of the comments opposing wilderness designation cited the impacts to ranch operations and impacts to access to the old town site and cemetery at Val Verde, as well as to the Little San Pasqual Wilderness Area.

Several commentators felt the Antelope WSA was unsuitable because it is "an arid land with no natural water, very little vegetation, hardly any wildlife, and no recreational attractions."

WSMR expressed concern that wilderness designation would conflict with their periodic need to enter the area to recover debris and their use of the area for low altitude training flights. Designation would limit the military's access to the area, but reasonable access could be granted after determining the means that would least impact wilderness values.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, education/research, and the WSMR Aerobee 350 Safety Evacuation Zone are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.
Representation of Chihuahuan Desert Environments in the National Wilderness Preservation System	This issue is outside the scope of the present document. It will be analyzed on a regional and National basis in the Statewide Wilderness Environmental Impact Statement.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
Amended Boundary (Proposed Action)	Public comments prompted the consideration of an Amended Boundary Alternative. This alternative improves manageability and reduces resource conflicts.
No Action/ No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis
The primary issue identified for this WSA is the quality of area's wilderness values.

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VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 20,710 acres of public land within the Antelope WSA would be recommended suitable for wilderness designation. (See Map 9-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide the wilderness values present in the Antelope WSA with long-term Congressional protection. Wilderness values, especially opportunities for solitude, would be enhanced by the adjacent Little San Pasqual Wilderness Area. Because the Antelope WSA generally lacks topographic or vegetative screening, opportunities for solitude are largely dependent on the size of the area. Both the Antelope WSA and the Little San Pasqual Wilderness are relatively narrow, but in combination, they would create an area of up to 8 miles wide with outstanding opportunities for solitude. Because the U.S. Fish and Wildlife Service does not allow grazing on the Little San Pasqual, the existing fence would remain in place, and the Antelope WSA and the Little San Pasqual Wilderness would remain distinct areas with different management policies.

2. Impacts to Livestock Grazing

Grazing would continue subject to sound rangeland management. Wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Construction of new rangeland developments would be restricted under wilderness management to those which primarily benefit the natural rangeland values of the wilderness resource. Authorization for vehicular access or for the use of mechanized equipment to maintain 2 miles of buried pipeline would be given only if there were no practical alternatives and would be on a permit basis. Approximately 2½ miles of buried pipeline, installed during interim management, would not be maintained with mechanized equipment. An unauthorized livestock corral in T. 7 S., R. 1 E., Section 21 would be physically removed.

B. Amended Boundary (Proposed Action)

Under the Amended Boundary Alternative, 9,892 acres of public land within the Antelope WSA would be recommended suitable for wilderness designation. The remaining 10,818 acres would be recommended nonsuitable for wilderness designation. (See Map 9-1 for amended boundary.)

The amended boundary would improve naturalness by eliminating 2 miles of fence, ½ mile of pipeline, 1 drinking trough, 4½ miles of vehicle

routes, and 1 mile of cherry-stemmed powerline from the WSA. Opportunities for solitude would improve because portions of the WSA adjacent to maintained roads would be eliminated under this alternative. Manageability would be improved since the amended boundary area would contain only 40 acres of State inholdings and would be bound by designated wilderness on the west and the White Sands Missile Range (WSMR) on the east. Manageability problems resulting from vehicular use by dove and quail hunters would still exist, but would be reduced by eliminating most existing vehicle routes and access points. Under the Amended Boundary Alternative, impacts to access needs by WSMR would be lessened by reducing the size of the area subject to wilderness management. The 9,892 acres of Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe would be permanently preserved as wilderness under this alternative.

1. Impacts to Wilderness Values

Wilderness designation would provide the wilderness values present within the amended boundary with long-term Congressional protection. In combination with the adjacent Little San Pasqual Wilderness, this would increase the amount of Chihuahuan Desert grassland designated as wilderness from 20,092 acres to 29,984 acres. This would enhance opportunities for solitude since existing opportunities in this relatively flat and open area are dependent more on the size of the area than on topographic or vegetative screening.

Because the U.S. Fish and Wildlife Service does not allow grazing on the Little San Pasqual, the existing fence would remain in place and the Antelope WSA and the Little San Pasqual Wilderness would remain distinct areas with different management policies.

2. Impacts to Livestock Grazing

Under this alternative, impacts to livestock grazing would be reduced by excluding one grazing allotment and portions of another from the constraints of wilderness management. By locating the boundary of the amended area along an existing vehicle route, impacts to ranch management would be minimized. The amended boundary contains 2 buried plastic pipelines, totaling 4 $\frac{3}{10}$ miles, and 3 drinking troughs. Vehicular access or the use of mechanized equipment to maintain $1\frac{1}{2}$ miles of pipeline would be authorized only if there were no practical alternatives and would be on a permit basis. The $2\frac{1}{2}$ miles of pipeline which were constructed during interim management would not be maintained with mechanized equipment. No additional rangeland developments are planned within the amended boundary at this time.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 20,710 acres of public land within the Antelope WSA would be recommended nonsuitable for wilderness designation.

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If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable use of the area would be continued livestock grazing.

1. Impacts to Wilderness Values

The wilderness values and special features of the Antelope WSA would not be provided with long-term Congressional protection. Since existing and proposed BLM plans do not identify any activities which would significantly impact natural values, the area would retain its generally natural character in the short-term. Opportunities for solitude would be impacted by continued vehicular access for ranch operations and by use during hunting season.

The Antelope WSA's location in an expansive desert environment and sweeping vistas of surrounding landscapes are important contributors to the feeling of naturalness and solitude inside the WSA. Under this alternative, these circumstances would not change and therefore, would not significantly impact wilderness values.

In the long-term, rangeland management activities and continued vehicular access could impact the naturalness of the WSA through the creation of additional rangeland developments and access routes. These impacts would not significantly alter the existing situation in the WSA nor would they impact the adjacent Little San Pasqual Wilderness.

2. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

APPENDIX 10

CONTINENTAL DIVIDE (NM-020-044)

I. GENERAL DESCRIPTION

A. Location

The Continental Divide Wilderness Study Area (WSA) is located in west-central New Mexico. It lies in Catron County, south of the Plains of San Agustin, approximately 29 air miles south of Datil. The WSA name is derived from the fact that the area is bisected by the Continental Divide.

The U. S. Geologic Survey (USGS) topographic maps covering the WSA are the Fullerton, Paddy's Hole, Mojonera Canyon, Rael Canyon, O Bar O Canyon, Indian Peaks West, and Pelona Mountain quadrangles. All of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

The WSA has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September during brief, but often heavy thundershowers. Winter is usually the driest season. Annual precipitation averages about 14 inches over the entire WSA, with the lower elevations averaging 12 to 13 inches and higher elevations 16 inches. Average annual snowfall is 2 to 3 feet in most localities.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperatures as low as -28°F have been recorded. Mean annual maximum and minimum temperatures for the area are 63° and 26°F, respectively. The frost-free season lasts nearly 90 days in those elevations above 7,000 feet.

The prevailing winds over the WSA are from the southwest. Spring and summer winds of high intensity are common.

Pelona Mountain, at 9,212 feet, is the highest point in the WSA. Elevation differences range up to 2,400 feet with the lowest elevations (6,785 feet) occurring on the western edge of the WSA. The Continental Divide runs east-west through the WSA.

Pelona Mountain has three major drainages: Railroad Canyon drains to the south; Cottonwood Canyon courses west; and Shaw Canyon drains to the north. The northwestern portion of the WSA is characterized by rugged canyons and rough, hilly country. To the south and east of Pelona Mountain stretch extensive, rolling short grasslands.

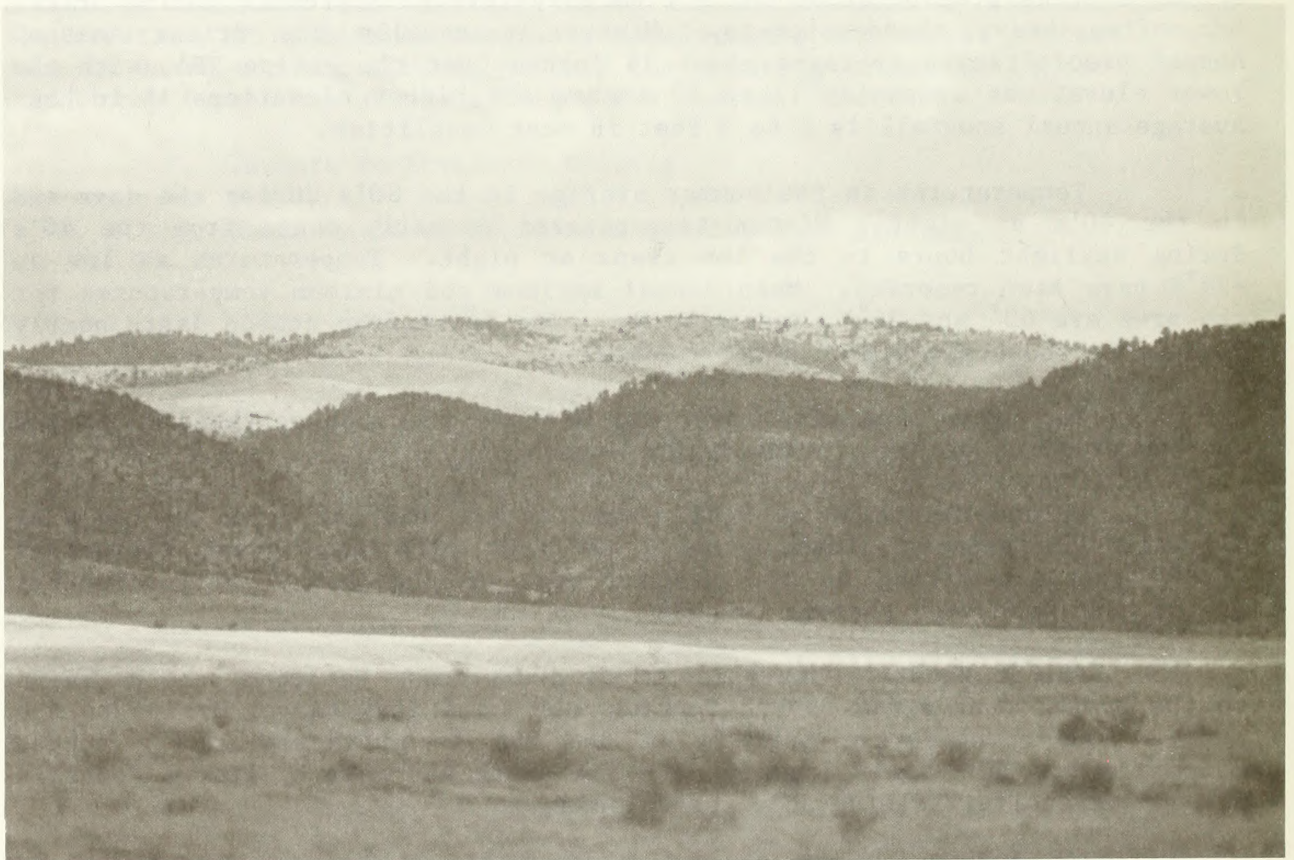
CONTINENTAL DIVIDE

C. Land Status

The Continental Divide WSA contains 68,761 acres of public land. There are 1,680 acres of private land and 3,420 acres of State land inholdings in the WSA (see Map 10-1 for land status).

D. Access

The WSA may be reached by State Highway 78 and from State Highway 12 via County Roads B019 and C016. From these maintained roads, it is necessary to take unmaintained two-track ways into the WSA. Major access routes are through Shaw Canyon in the north, Cottonwood and West Canyons in the west, and through the Adobe Ranch into the southern and western portions of the WSA. All these routes cross private land. The acquisition of an easement across the private land would be required to ensure legal access into the WSA. Access from the north has been restricted by the landowner.



Cottonwood Canyon in Western Portion of the WSA.

CONTINENTAL DIVIDE WSA (NM-020-044)

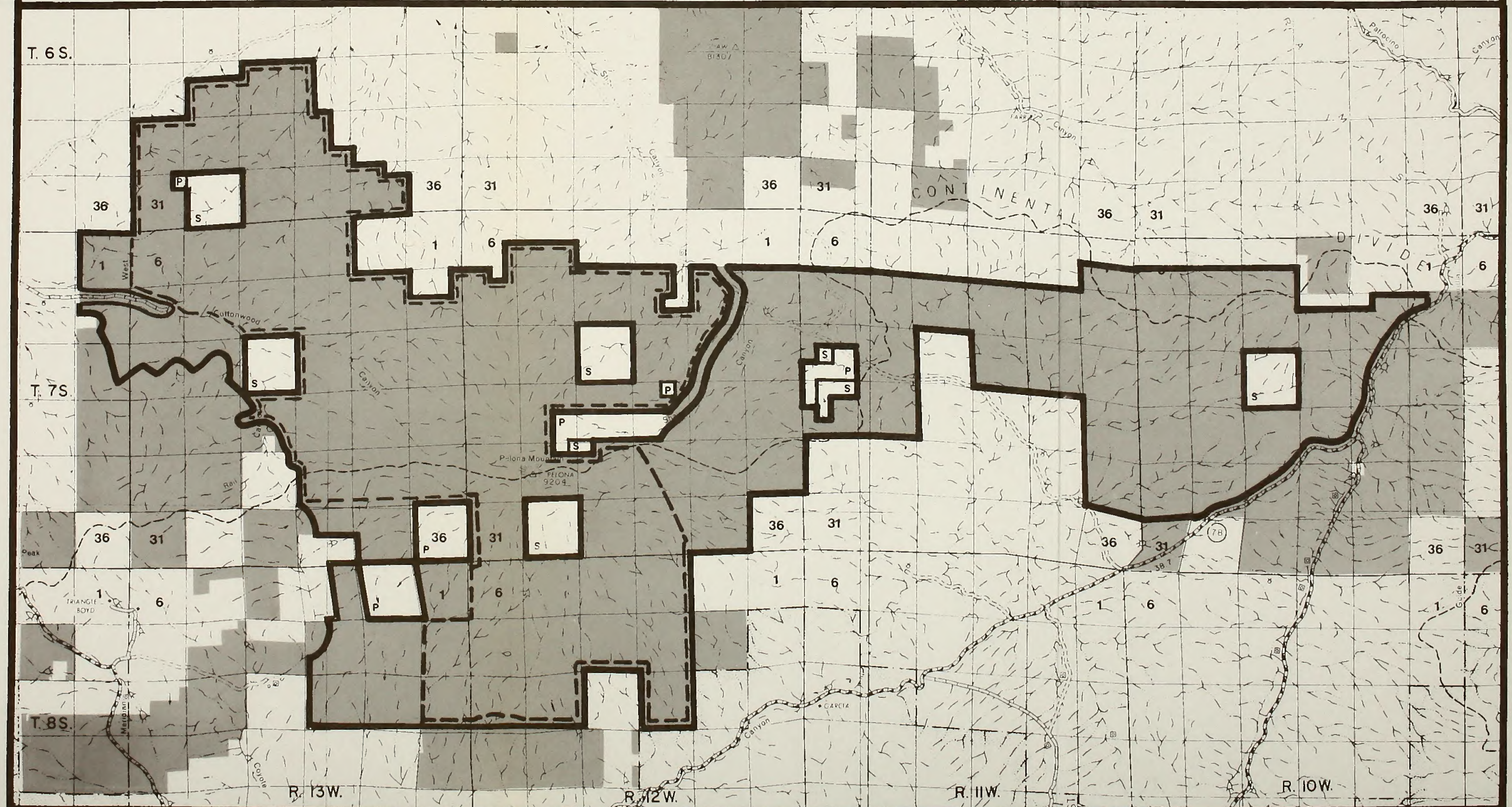
- WSA Boundary
- Amended Boundary (Proposed Action)
- BLM
- Private
- State

*State and private ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, January 1985.

MAP 10-1
LAND STATUS

Scale: 1/2 inch=1 mile



E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Action/No Wilderness
°Manage 68,761 acres as wilderness.	°Manage 35,635 acres as wilderness.	°Manage 68,761 acres without wilderness protection.
-Close 45 miles of vehicle trails.	-Close 33 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to 28 dirt tanks and 1/2 mile of pipeline.	-Require permits for vehicular access to 11 dirt tanks.	
-Prescribed burns, 9 additional wildlife water sources, and seeding of additional browse species would be allowed if the projects would enhance wilderness values.	-Prescribed burns, 3 additional wildlife water sources, and seeding of additional browse species would be allowed if the projects would enhance wilderness values.	-Management actions proposed in the Habitat Management Plan could be carried out as proposed.
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-68,761 acres would be closed to energy minerals leasing.	-35,635 acres would be closed to energy minerals leasing.	-68,761 acres would remain open to energy minerals leasing and mining claim location.
-68,761 acres would be closed to mining claim location. The closed area would include 24,000 acres with moderate potential for tin.	-35,635 acres would be closed to mining claim location. The closed area would include 14,700 acres with moderate potential for tin.	
-Attempts would be made to acquire 5,869 acres of State and private lands within and adjacent to the WSA.	-Attempts would be made to acquire 2,760 acres of State and private lands within and adjacent to the WSA.	-No special attempts would be made to acquire State and private lands.
-Approximately 9.1 million board feet of ponderosa pine and 15,070 cords of pinyon-juniper firewood would be unavailable for commercial sale.	-Approximately 7.9 million board feet of ponderosa pine and 14,605 cords of pinyon-juniper firewood would be unavailable for commercial sale.	-Timber resources in the area could be managed for commercial use (9.1 million board feet of ponderosa pine and 15,070 cords of pinyon-juniper firewood).
	°Manage 33,126 acres without wilderness protection.	
	-33,126 acres would remain open to energy minerals leasing and mining claim location.	
	-Vehicle use would be allowed to continue.	
	-Current levels of authorized grazing use would be maintained.	
	-Management actions proposed in the Habitat Management Plan could be carried out as proposed.	
	-Timber resources in the area could be managed for commercial use.	

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (68,761 acres)	Wilderness protection would maintain the area's naturalness, outstanding opportunities for solitude, outstanding opportunities for hunting, sightseeing, hiking, and camping, and archaeological, wildlife, and scenic special features.
Amended Boundary (35,635 acres recommended suitable, 33,126 acres recommended nonsuitable) (Proposed Action)	Wilderness protection would maintain values in an area with the highest wilderness values.
No Action/No Wilderness (68,761 acres)	Commercial management of the area's timber resources, new rangeland developments, mineral exploration activities, and additional vehicle routes would impact the quality of the area's naturalness and outstanding opportunities for solitude in the long-term. The area could also be partitioned into parcels less than 5,000 acres in the long-term.

II. EXISTING RESOURCES

A. Geology

The Continental Divide WSA is located within the Datil-Mogollon Volcanic Plateau. This area is transitional between the Basin and Range province and the Colorado Plateau. The Plains of San Agustin have many features typical of classic block-faulted, Basin and Range valleys. The major geologic feature in the WSA is Pelona Mountain, a composite strato-volcano of basaltic to andesitic composition. Pelona Mountain is one of a series of Tertiary volcanic features which surround the southwestern portion of the Plains of San Agustin. Apart from some minor Quaternary alluvium, the rocks exposed within the WSA are confined to rhyolitic and andesitic flows and tuffs of the mid-Tertiary Datil formation, unnamed late Tertiary andesitic to basaltic flows, and volcanic sandstones and conglomerates of the early Quaternary Gila conglomerate. Outcrops along Rail and Cottonwood Canyons exemplify the sequential nature of these rock formations. A small uplift at the foot of Horse Mountain to the northwest of the WSA and a deep well drilled near the center of the Plains of San Agustin suggest that sandstones and limestones of Cretaceous, Triassic, and Permian age lie beneath the volcanic pile comprising Pelona Mountain. The deep well also suggests that the Mesozoic and Paleozoic rocks unconformably overlie deep Precambrian Gneiss.

B. Water

The Continental Divide WSA is located on the southern boundary of the Plains of San Agustin, a closed basin with interior surface water drainage. While no permanent streams or surface water bodies exist on public land in the WSA, a cienega which has been developed to provide water for livestock is located on private land at the base of Pelona Peak. Many of the alluvial arroyos and canyons, which drain from high mountains, contain runoff during the more intense storms. This runoff usually disappears quickly into alluvium along the border between mountains and lowlands. Occasionally, small water bodies exist in depressions in basin floors until they evaporate or infiltrate.

The principal aquifer in the area is formed by the Quaternary age bolson deposits. Some water may be present in the small patches of Gila conglomerate and Quaternary alluvium, which are widely scattered in the area. Large amounts of ground water are present beneath the adjacent Plains of San Agustin area, as it is within a closed drainage basin. The depth to water in the area ranges from less than 50 feet to 500 or more feet in the higher mountainous areas. Only limited water quality data are available in the area as no wells are monitored on a regular basis. Analysis of water from a well in the Plains of San Agustin, which is very near to and typical of ground water in the WSA, indicates that the water is suitable for livestock purposes.

C. Soils

Approximately 75 percent of the WSA has soils that are shallow to moderately deep over bedrock. The bedrock is basalt, tuff, or volcanic

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conglomerate. Rock outcrop is common in the area. Soils are generally loamy to clayey and commonly have rock fragments throughout.

Erosion is not serious on any of the soils that are gently sloping, due to the protective rock fragment cover. There is a sizable area on the western portion of the WSA that would be very susceptible to water erosion due to the steep slopes. Wind erosion would not be a problem anywhere in the WSA.

D. Vegetation

1. General

In the Continental Divide WSA, the following Standard Habitat Sites (SHS's) are present:

Ponderosa-Pinyon Mountain (4,945 acres)

The Ponderosa-Pinyon Mountain SHS in the WSA is dominated by ponderosa pine. There are a few areas of Douglas fir which are usually in north-facing drainages or on north-facing slopes in the higher elevations. Limber pine is scattered at the highest elevations. The coniferous forest type is usually found at the higher elevations in the WSA on the north- and west-facing slopes with a mixture of pinyon pine, alligator juniper, and one-seed juniper also occurring on southern and eastern slopes. This type has an understory of gray oak, Gambel's oak, mountain mahogany, snow berry, wax current, and buck brush; some traces of elderberry and wild rose are also found in drainage bottoms. Cool-season grasses found in this SHS are Junegrass, fringed brome, mutton grass, Arizona fescue, pine dropseed, and timber oat grass. Of these grasses, mountain muhly, mutton grass, and Junegrass are the most common. Pinyon pine is found throughout the understory of this type, occurring generally as young saplings. Frequency of its occurrence is high in the large transition zones between this and the other types. Animals that can be found in this SHS include mule deer, wintering elk, gray foxes, golden eagles, turkey vultures, red-tailed hawks, and great horned owls. Other animals that can occasionally be found include black bear, mountain lions, bobcats, and bald eagles.

Blue Grama-Snakeweed Hill (52,704 acres)

This SHS is found principally on the southern and eastern portions of the WSA plus a large area on the high plateau in the center of the WSA spreading northwest and southwest from Pelona Mountain. The grassland is dominated by blue grama. Wolf tail is associated with blue grama over most of the WSA. Other grasses found in lesser amounts are squirrel tail, needle and thread, and black grama. The most common shrubs found mainly in the swales and drainages of this type are broom snakeweed, Apache plume, rubber rabbitbrush, fourwing saltbush, and winterfat. Common animals in this SHS include black-tailed jackrabbits, coyotes, kit foxes, pronghorn, red-tailed hawks, and golden eagles.

Pinyon-Juniper Hill (11,112 acres)

The Pinyon-Juniper Hill SHS usually lies just below the Coniferous Forest type in elevation and intermingles with the Coniferous Forest type in a transition zone. This type predominates on southern and eastern slopes and ridge tops where soils are shallow and undeveloped. It is characterized by an overstory of chiefly pinyon pine, alligator juniper, and one-seed juniper. The major understory species associated with the pinyon-juniper include mountain mahogany, oak, rubber rabbitbrush, globemallow, blue grama, and sunflower. The most common grass is blue grama with sideoats grama and western wheatgrass found in the better sites. In addition to mule deer, the SHS provides a seasonal use area for wintering elk on Pelona Mountain. Other mammals common to this SHS include desert cottontails, cliff chipmunks, porcupines, rock squirrels, bobcats, and mountain lions. Bird species common to this SHS include the fly catcher, vireos, sparrow, nighthawk, warbler, raven, flicker, and woodpecker.

2. Threatened or Endangered Plant Species

No threatened or endangered plant species have been recorded from this area. However, the WSA does contain habitat which offers potential for the occurrence of 17 species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Continental Divide WSA supports approximately 309 wildlife species. These include 59 reptile/amphibian species, 75 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species for the Continental Divide WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the SHS discussion in the Vegetation section.

2. Threatened or Endangered Fauna Species

The WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federally endangered species. Wintering bald eagles are known to occur in the WSA.

F. Visual

The Continental Divide WSA contains two basic visual landscapes: a vast expanse of rolling grasslands and a forested environment characterized by steep canyons and broad ridges. They have been rated as Visual Resource Management (VRM) Classes IV and II, respectively.

The vast expanse of smooth rolling hills which extend to the east and south of Pelona Mountain also creates a dramatic visual landscape. The

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pastel browns, greens, and yellows of the rolling hills are backdropped by blue mountains and extend for several hundred square miles with few human structures in evidence except for occasional fences, roads, and windmills.

The area west and northwest of Pelona Mountain is a rugged landscape which exhibits the diversity of color, vegetation, relief, shape, and geology common to the pine-forested mountains of the region. Numerous vantage points which exist along ridges and other high points in this portion of the WSA offer spectacular vistas. Views from the 1,200-foot escarpment along the western edge of the WSA extend across the Plains of San Agustin and encompass much of west-central New Mexico.

G. Cultural

A total of 11 sites have been recorded: nine historic homesteads or associated historic features, one historic grave, and one prehistoric site. Bat Cave (on the National Register of Historic Places), when excavated in the late 1940's, was reported to contain the earliest occurrence of maize in North America. This conclusion has been questioned by some researchers. It is hoped that testing at Bat Cave by the University of Michigan (summer of 1981) will resolve the question of such early dates.

H. Air

Generally, the quality of air within the Continental Divide WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

Mineral resources potential of the lands within the WSA is shown on Map 10-2 and the location of mining claims is shown on Map 10-3.

1. Energy Minerals

As of December 1, 1984, there were no mineral leases in the WSA.

a. Oil and Gas

No oil and gas exploration wells have been drilled within the WSA. The closest exploration well to the WSA is a 12,284-foot dry wildcat well within the Plains of San Agustin, approximately 35 miles northeast of Pelona Peak. This dry well suggests that a sequence of possible petroleum source and reservoir rocks (Cretaceous, Permian, and Mississippian in age) lie below the volcanics comprising Pelona Mountain. Within this region, a few oil and gas wells have tested this sequence with negative results. The majority of the WSA could probably be leased noncompetitively, but it is doubtful that any future exploration would occur within the WSA unless some encouraging wells were drilled within the region. The potential is considered low.

b. Uranium

Uranium and thorium mineralization is often associated with volcanic deposits. Despite this relationship, regional information suggests a low potential for the discovery of economic uranium or thorium deposits.

2. Nonenergy Minerals

As of September 17, 1984, there were three post-Federal Land Policy and Management Act (FLPMA) mining claims recorded with BLM in the WSA.

a. Tin

Although no occurrences of base metal mineralization have been identified within the WSA, the geologic environment is favorable for tin deposits. The rhyolitic flow unit of the Datil formation, which is exposed at the surface and underlies most of the WSA, is the host rock for tin deposits within the Taylor Creek mining district. The northernmost extent of known significant tin mineralization is along Squaw Creek, approximately 12 miles southeast of Pelona Peak. Anomalously high tin values have been reported in a stream sediment sample 6 miles east of Pelona Peak. This anomalous sample was taken within 2 miles of the WSA's border and from a stream whose origin is within the WSA. This sample was taken as part of the Geology, Energy, and Mineral Resources Assessment of the San Agustin Area performed by Geoexplorers International, Inc. (1982). The

CONTINENTAL DIVIDE WSA (NM-020-044)

MAP 10-2

MINERAL RESOURCE POTENTIAL*

- WSA Boundary
- Amended Boundary (Proposed Action)
- BLM
- ▣ Private
- ▣ State

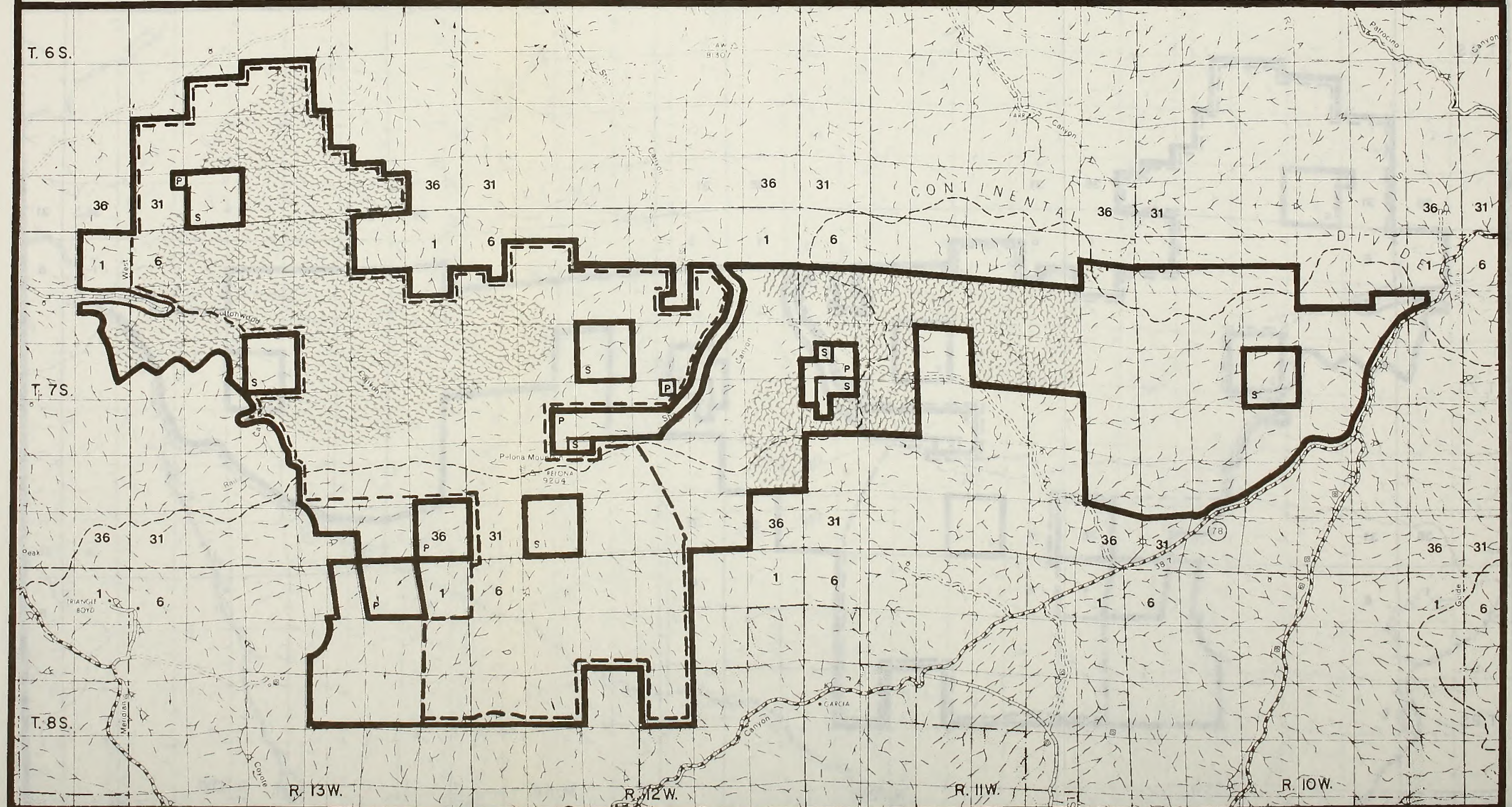
*State and private ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, January 1985.

▣ Tin

*Areas of moderate (2) mineral potential are shown for lands within the WSA; the potential may extend outside the WSA boundary. Areas of low potential are not shown.

Scale: 1/2 inch=1 mile



CONTINENTAL DIVIDE WSA (NM-020-044)

MAP 10-3 MINING CLAIMS AND MINERAL LEASES*

- WSA Boundary
- Amended Boundary (Proposed Action)
- BLM
- ▣ Private
- ▣ State

*State and private ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, January 1985.

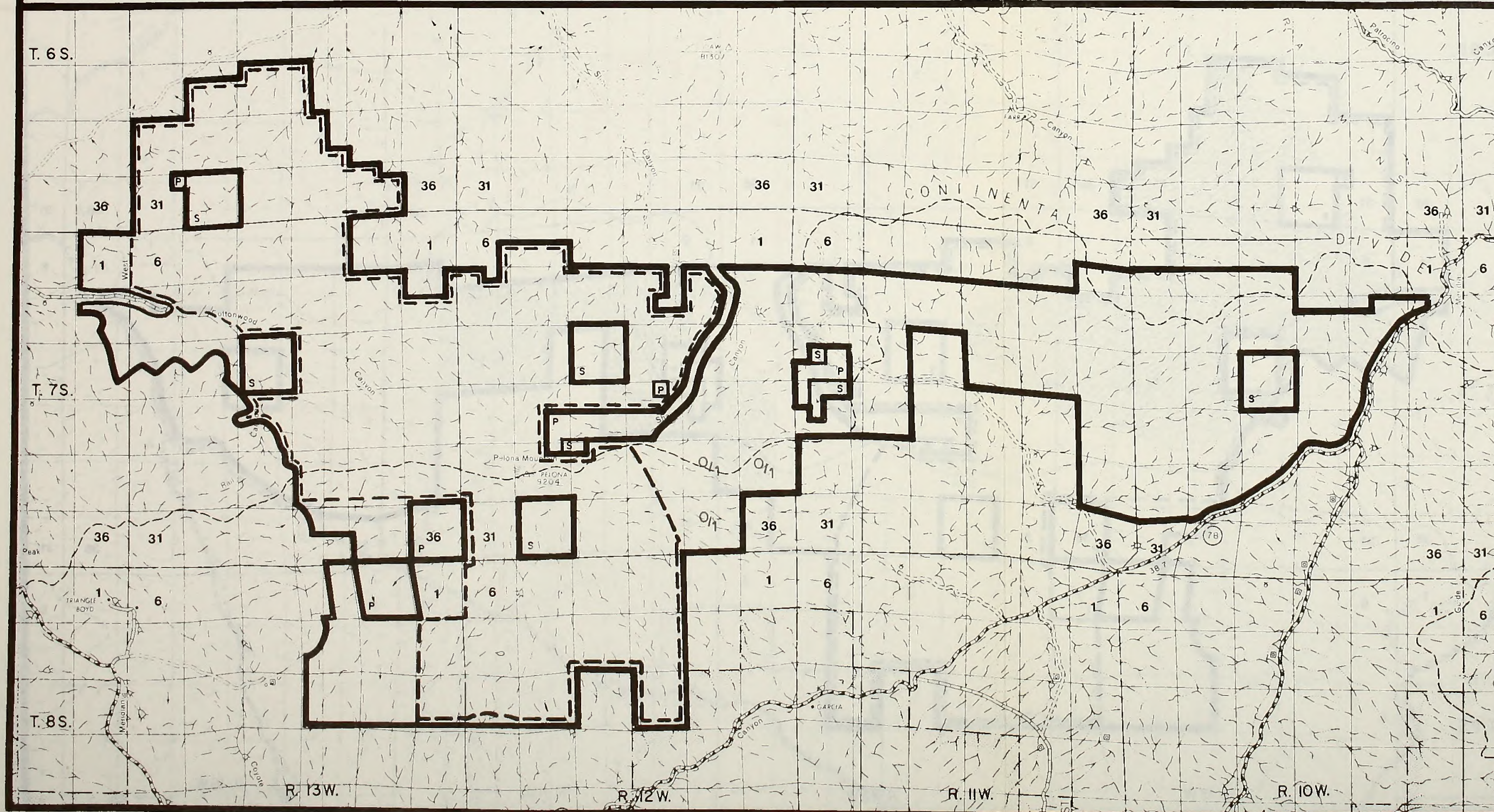
0/1 Pre-FLPMA Mining Claims per section
1 Post-FLPMA Mining Claims per section

(Claim information from BLM records dated September 17, 1984; claims which overlap more than one section are counted in each section in which they occur.)

FLPMA was passed October 21, 1976.

*No mineral leases exist in the WSA as of BLM records dated December 1, 1984.

Scale: 1/2 inch=1 mile



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conclusions reached as a result of this assessment indicate that the WSA provides a low to moderately favorable environment for tin.

If economic conditions encourage the exploration and development of known tin deposits within the Taylor Creek mining district, peripheral areas such as Pelona Mountain would become of great interest. Under such a situation, the Pelona Mountain area could be subject to geochemical sampling, block claim location, and eventually, test drilling. The possibility exists that a large, low-grade tin deposit could be developed.

b. Base and Precious Metals

Other base metal and precious metal mineralization could exist but no direct or strong indirect evidence exists to support this inference. In general, the geologic environment has low potential for economic precious or base metal mineralization.

MINERAL RESOURCES POTENTIAL OF THE CONTINENTAL DIVIDE WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*	Approximate Acreage in Amended Boundary*
Energy Minerals				
Oil and Gas	Mesozoic and Paleozoic continental and marine sedimentary rocks	Low	--	--
Uranium	Tertiary Gila conglomerate	Low	--	--
Nonenergy Minerals				
Base and Precious Metals	Early Tertiary igneous intrusions in Paleozoic and Precambrian rocks	Low	--	--
Tin ^{a/}	Hematitic veins in Tertiary flow banded rhyolites and nodular concretions in Quaternary fluvial deposits	Moderate Low	24,000 --	14,700 --

Notes: *Acreage was not calculated for areas with low potential.

^{a/}Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

B. Watershed

The Continental Divide WSA contains two watersheds: North Divide and South Divide. All lands in the watersheds are classified as productive acres. There have been no projects for land treatment or erosion control except for a prescribed burn in November 1981, a small (5 acres) tree-planting project near the head of Cottonwood Canyon, and snag felling of timber. No areas within the WSA are in the severe erosion classification. Runoff over the area averages 1 inch per year with erosion amounts of 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

The boundary of the WSA includes portions of five grazing allotments. The Y Ranch and Paddy's Hole allotments graze yearlings in the WSA from April 15 until October 15. Shaw Canyon allotment grazes cows/calves in the WSA from April 15 until October 15. The beginning and ending dates of the above grazing periods may vary depending on weather conditions such as the presence or absence of snow. The Coyote Canyon and Adobe Ranch allotments run cow/calf operations. Grazing use varies during the year based upon availability of forage and the type of grazing system in use on the allotment.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Coyote Canyon	11,986	2,448	4,280	36%
Y Ranch	24,199	3,993	13,299	55%
Shaw Canyon	38,233	6,936	29,882	78%
Paddy's Hole	4,480	852	1,720	38%
Adobe Ranch	28,158	7,200	19,580	69%
TOTAL			68,761	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock conditions and forage conditions, supplementing salt or protein, availability of livestock water, breaking ice on livestock waters, and performing normal maintenance on fences, dirt tanks, and pipelines. Pickup trucks are used for most of the daily ranch operations in the WSA. Normal maintenance of various rangeland developments is performed using motorized vehicles such as a pickup truck and bulldozer to clean the dirt tanks.

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EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

<u>Allotment Name</u>	<u>Type of Development</u>
Coyote Canyon	6 miles of boundary fence 2 dirt tanks
Y Ranch	3 miles of interior fence 9 miles of boundary fence 6 dirt tanks
Shaw Canyon	11 dirt tanks 1½ miles of fence 19 miles of boundary fence
Paddy's Hole	2 miles of boundary fence
Adobe Ranch	10 miles of interior fence 9 dirt tanks ½ mile of pipeline

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

Potential livestock grazing in the WSA could increase with additional rangeland developments needed to intensify grazing management. The type and location of these developments have not been specifically identified at this time.

D. Timber Harvest

Forest resources in the WSA consist of an estimated 9.1 million board feet of ponderosa pine and 15,070 cords of pinyon-juniper firewood. Presently, there is no authorized use of the forest resources in the WSA.

Past use of the area included three timber sales. The last sale was held in 1960. These sales removed a total of approximately 4.5 million board feet of timber from 2,500 acres. Many of the cut trees were left in place when it was realized that the operation had become uneconomical. Small sales of Christmas trees took place in the area north of Pelona Peak. Very little of the pinyon-juniper type has been utilized for wood products.

Future commercial use of the forest land on Pelona Mountain would be the utilization of the timber stands by selective cutting to clean out the mature decadent age classes. Sanitation harvesting and other silvicultural prescriptions, primarily controlled burns and natural fires, would be important applications for the commercial ponderosa stands to promote regeneration opportunities if the stands are to be maintained or improved, and utilized. The present stand conditions represent a declining

trend in the succession of a ponderosa forest. If no management is applied to these stands, most of the ponderosa stands in the WSA would be eliminated over the next 200 years as a result of past harvesting methods, a general lack of reproduction, grazing pressure, lack of wild fires, low stand vigor, and an ever increasing encroachment of the pinyon-juniper type.

The importance of the commercial timber resources on Pelona Mountain is potentially significant, both for its diversity and its volume. Presently, however, the site for ponderosa is marginal, access is difficult, and harvesting feasibility is questionable. The impact of the timber in the WSA, if offered to the local economy, would be insignificant compared to the volumes that come from the Gila National Forest land. However, this significance could increase in the future if wood demands escalate.

E. Recreation

Current recreational use is limited primarily to big game hunting for deer, pronghorn, and occasionally elk, bear, and lion. Off-road vehicle (ORV) use associated with hunting and possibly some exploring are the only recreational ORV uses known to occur. Bat Cave is an archaeological site of such significance that it draws sightseers and interested groups. Occasionally, backpackers and sightseers use the area. Other recreational uses in the area are presently limited by the low levels of public knowledge of the area, the distance from population centers, and the lack of legal access.

The area offers a high potential for backpacking, hiking, hunting, camping, horse packing, nature photography and study, and varied forms of sightseeing.

The Continental Divide crosses Pelona Mountain and presently attracts a few hikers following the route of the Continental Divide National Scenic Trail (CDNST). Should the CDNST actually be routed through the WSA, use would undoubtedly increase. Future use on trail segments across the WSA would probably be less than 100 hikers a year.

F. Education/Research

Bat Cave has been the site of important research into the early domestication of maize in North America. It represents one of the most significant opportunities for archaeological research in the Southwest.

Opportunities for environmental education exist based on the diversity and abundance of wildlife, vegetation, geology, and cultural resources present in the WSA. The distance from population centers, however, will probably limit the direct use of the area for environmental education.

G. Native American

There are no known current or potential Native American religious sites within the WSA.

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H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land withdrawn within the WSA.

I. Wildlife

A wildlife habitat management plan (HMP) developed for the area is designed to improve and protect habitat for bald eagles, mule deer, pronghorn, elk, Merriam's turkeys, tassel-eared squirrels, harlequin quail, and cavity nesting birds. The objectives of the plan are to create more roosts, water sources, and prey species for bald eagles, and to produce more forage for elk, mule deer, and pronghorn. Actions proposed in the plan include prescribed burns (interseeding with 40 percent grass, 30 percent forbs, and 30 percent browse), construction of nine wildlife waters, and fencing off some reservoirs from livestock use. When implemented, it will increase the potential of the area as wildlife habitat.

The area has not been identified by the New Mexico Department of Game and Fish (NMDGF) for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Continental Divide WSA generally appears natural. The feeling of naturalness in the WSA is enhanced by its large size and topographic variation. Ponderosa pine and pinyon-juniper woodlands cover much of the northwestern third of the WSA and provide a high degree of vegetative screening. These factors reduce the impacts of rangeland developments, vehicle routes, and evidence of past logging in the WSA.

This 68,761-acre WSA contains approximately 45 miles of vehicle routes which vary in nature from washed out logging roads to regularly used ranch access routes. Most of the logging roads have not been regularly used since logging operations ceased in 1960; some of these roads are returning to their former condition. Others have become access routes for ranch operations and have been maintained by the passage of vehicles. Other routes in the WSA have been created to provide access to rangeland developments and pastures on both public and private lands.

Other impacts on the area's naturalness include 28 dirt tanks and 51 miles of fences. The impact of these rangeland developments upon the naturalness of the WSA varies with the type of terrain in which they are found. In the rolling, grassy areas of the WSA, the lack of vegetative screening extends the visual impacts of rangeland developments over a wider area. Portions of the WSA north and west of Pelona Mountain are forested and many rangeland developments are generally not noticeable. However, some impacts are apparent because of the visibility afforded by ridgelines and other topographic features.

Human impacts in the forested areas west and north of Pelona Mountain include old logging roads, and downed timber and stumps left from past logging activity which covered approximately 2,500 acres. The logging operation abruptly ended as some trees were cut and never removed. The impacts of these past human activities are becoming less evident, through natural processes, with the passage of time and do not significantly affect the naturalness of the WSA.

The large size of the WSA coupled with the available topographic and vegetative screening mitigate the human impacts on naturalness and the WSA generally appears natural.

b. Solitude

The remote location and topographic variation in the Continental Divide WSA offer outstanding opportunities for solitude.

These opportunities are reduced slightly in the rolling grassland sections of the WSA where the open character of the landscape and

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the lack of vegetative screening increase the area affected by other human activities. Human activities in the area consist primarily of motorized access in support of ranch operations and hunters during hunting season.

Portions of the WSA north and west of Pelona Mountain are forested and this vegetative screening provides a high degree of solitude. There are existing ranch operations requiring motorized access in this area, but the topographic and vegetative screening present would reduce the significance of their impacts.

c. Recreation

Primitive recreation opportunities are highest in the forested, mountainous area in the northwestern portion of the WSA. These opportunities include hunting, various kinds of sightseeing, hiking, and camping. Deer and pronghorn hunting account for most of the current recreational use in the WSA. The varied topography, vegetation, wildlife, and the scenic vistas found in the area provide good sightseeing opportunities. Hiking and camping opportunities are also considered good in the forested parts of the WSA. These opportunities would be enhanced in the future if the proposed Continental Divide National Scenic Trail is routed through the WSA.

The Continental Divide WSA provides outstanding opportunities for primitive and unconfined recreation.

2. Special Features

Wildlife, archaeological, and scenic values are the Continental Divide WSA's most significant special features. The remote, undeveloped character of the region and the diverse vegetation and landforms result in a wide variety of wildlife in the area. The southern and eastern portions of the WSA provide excellent pronghorn habitat. Forested portions of the WSA support a moderate mule deer population as well as mountain lion, black bear, turkey, and wintering elk. Eagles, including at least four wintering bald eagles, are also found in the WSA.

Archaeological sites are not known to be numerous in the area, but this may be the result of the low level of inventory. Known archaeological sites include the highly significant Bat Cave and a historic multi-room masonry structure of unknown origins. Bat Cave is on the National Register of Historic Places. Earlier people, living in the cave on the shores of the extinct Lake Agustin, developed what is believed by some to be the earliest domesticated maize in North America.

The numerous vantage points provided by the mountainous and rolling character of the WSA and the open character of the surrounding landscape result in outstanding scenic vistas. These vistas include the expanse of the Plains of San Agustin to the west and north, and mountains including the San Mateo, Black Range, and the Gila and Aldo Leopold Wilderness Areas to the east and south.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Continental Divide WSA as being within the Upper Gila Mountains Forest Province with a potential natural vegetation of 4,945 acres of ponderosa pine/Douglas fir forest, 11,112 acres of pinyon-juniper woodland, and 52,704 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time of both Albuquerque and Las Cruces, New Mexico.

B. Manageability

Manageability of the WSA as wilderness is reduced by State and private inholdings, poorly defined boundaries in the rolling grassland sections of the WSA, and cherry-stemmed roads. While these factors would complicate wilderness management, the Continental Divide WSA could be managed as wilderness.

Surface inholdings in the WSA total 3,420 acres of State land and 1,680 acres of private land. Reasonable access would be granted by the BLM to the owners of these inholdings.

The surface inholdings in the WSA contain rangeland developments including dirt tanks, a windmill, fences, and vehicle routes. Noncompatible uses of these private and State inholdings could impact the wilderness values of the WSA.

A private inholding north of Pelona Mountain could present the most significant management problems. It is located at the base of Pelona Mountain and contains the largest body of water in the WSA, as well as a cabin. The presence of these features will require special management attention to avoid conflicts between recreational users and the landowner.

Not enough is known of the mineral potential in this area to fully assess the management problems presented by the subsurface inholdings. The presence of private mineral rights in an area which are believed to have some degree of mineral potential does create a possibility of incompatible uses occurring within the area.

The awkward configuration and lack of identifiable natural boundaries along the eastern portion of the WSA presents management

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problems. The lack of topographic barriers to vehicular travel in this area combined with poorly defined natural boundaries would create trespass problems resulting from existing use patterns. These existing use patterns consist primarily of hunters driving to hunting camps within the WSA. Public education and increased levels of patrolling could reduce, but not eliminate, these problems.

Two roads which are cherry-stemmed into the western and northern portions of the WSA compound the problem of regulating vehicular access. The first enters the northern part of the WSA from Shaw Canyon and provides access to a private inholding containing a cabin owned and used by the Shaw Canyon Ranch. This road is used primarily for ranch operations and by hunters during hunting season. A second road, cherry-stemmed up Cottonwood Canyon, provides access to the western portion of the WSA for ranch operators, BLM personnel, and hunters.

If the Continental Divide WSA is designated wilderness, the lands legally described below should be considered for voluntary acquisition.

Lands Recommended for Acquisition

<u>Legal Description</u>	<u>Acres</u>
State Land	
T. 6 S., R. 13 W., Section 32, All	640
T. 7 S., R. 10 W., Section 16, All	640
T. 7 S., R. 11 W., Section 18, SE $\frac{1}{4}$ NW $\frac{1}{4}$	40
Section 19, N $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ NE $\frac{1}{4}$	200
T. 7 S., R. 12 W., Section 16, All	640
Section 28, NW $\frac{1}{4}$ NW $\frac{1}{4}$	40
Section 29, NE $\frac{1}{4}$ NE $\frac{1}{4}$	40
Section 32, All	640
T. 7 S., R. 13 W., Section 16, All	640
TOTAL	3,520
Private Land	
T. 6 S., R. 13 W., Section 31, NE $\frac{1}{4}$ NE $\frac{1}{4}$	40
T. 7 S., R. 11 W., Section 18, SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$	236.30
Section 19, W $\frac{1}{2}$ NW $\frac{1}{4}$	72.70
T. 7 S., R. 12 W., Section 20, SE $\frac{1}{4}$	160
Section 21, S $\frac{1}{2}$	320
Section 22, SW $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$	200
Section 29, NW $\frac{1}{4}$ NE $\frac{1}{4}$	40
T. 7 S., R. 13 W., Section 36, All	640
T. 8 S., R. 13 W., Section 2, All	640
TOTAL	2,349

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

The draft wilderness analysis report for the Continental Divide WSA was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

The Continental Divide WSA was one of New Mexico's ten most discussed areas during the intensive wilderness inventory phase of the wilderness review process. The large size of the WSA and the presence of extensive grasslands which were felt to be underrepresented in the National Wilderness Preservation System were stressed in public support for recommending the entire WSA as wilderness. It was also pointed out that the area appears natural, offers outstanding opportunities for solitude and primitive recreation, and contains supplemental values.

Opponents of wilderness designation for the Continental Divide WSA included some Catron County residents and segments of the mineral and livestock industries. Prominent reasons included the effects of excluding the area from possible future mineral exploration and development, the presence of human impacts, limitations on ranch operations, and the feeling that additional wilderness would conflict with future development in the least developed of New Mexico's Counties.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 27 letters were received. Twenty-four of these letters supported wilderness designation for an area larger than that proposed in the draft. It was noted that the area has high wilderness and wildlife values, diverse landforms and habitats, and that this diversity would be increased through the addition of a larger area of grassland. Maps were also submitted in support of proposed boundary alternatives which would include additional areas of the grassland.

Two letters were received which opposed designation of the area as wilderness. Reasons for this opposition included the mineral potential of the area, especially for tin and base metals; its potential favorability for oil and gas; and the opinion that the area is monotonous and unnatural.

One response did not indicate support or opposition for wilderness designation, but commented on the lack of adequate data concerning livestock use in the amended boundary and on possible conflicts between wilderness designation and the objectives identified in the West Socorro Rangeland Management Program EIS.

The major issues raised during the public comment period concerned the alternative selected by the Area Manager rather than the adequacy of the resource information or impacts presented in the report. It was noted by opponents of wilderness designation that the area's mineral potential,

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especially for tin, indicates that it should be recommended unsuitable for wilderness designation.

The alternate boundary proposed in public comments represents a new alternative which was not considered in the draft.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to energy minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, education/research, Native American uses, and timber harvest are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.
An Alternative that Includes a Different Amended Boundary	Different amended boundaries were considered but not evaluated in this document because the amended boundary selected for analysis adequately balanced resource conflicts and wilderness values.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.
Representation of Southwest Grasslands in the National Wilderness Preservation System	This issue will be analyzed in the Statewide EIS.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
Amended Boundary (Proposed Action)	Improves manageability, reduces conflicts, and protects high wilderness values.
No Action/No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The quality of the area's wilderness and supplemental values and the area's tin potential are the primary issues for the Continental Divide WSA. Although no significant impacts to tin resources were identified, the minerals issue was analyzed because of the WSA's moderate potential and because mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 68,761 acres of public land within the Continental Divide WSA would be recommended suitable for wilderness designation. (See Map 10-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide the existing wilderness values in the Continental Divide WSA with long-term Congressional protection. Continental Divide would be managed to maintain the area's existing natural appearance, outstanding opportunities for solitude, outstanding opportunities for hunting, sightseeing, hiking, and camping, and special archaeological, wildlife, and scenic features. The BLM could manage the Continental Divide WSA in the long-term to provide a quality wilderness experience.

2. Impacts to Tin Resources

Under this alternative, it is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Continental Divide WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for nonenergy locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full potential of the area could not be assessed. Under this alternative, the opportunity for exploration and possibly development would be forgone in an area of approximately 24,000 acres with moderate tin potential.

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3. Impacts to Livestock Grazing

The WSA presently supports 12,754 animal unit months. The existing level of livestock operations as well as necessary vehicular access and the maintenance of rangeland developments would continue under wilderness management. Grazing is a permissible and compatible activity in wilderness; however, limitations on vehicular access, types of construction materials, and location of developments are necessary to protect wilderness characteristics.

It is difficult to assess how these limitations would affect grazing management in the WSA because the type and location of future rangeland developments have not been specifically identified at this time. However, based on such factors as existing ecological rangeland conditions, present livestock distribution, and the potential of the range sites, it is anticipated that additional rangeland developments could increase livestock grazing in the WSA. Wilderness designation would not have significant impacts on existing livestock grazing in the WSA.

Wilderness designation would limit, but not preclude, rangeland management actions. Limitations on design and placement of new rangeland developments would probably reduce maximum potential stocking levels.

Wilderness designation would result in the modification of the experimental stewardship program for the Y Ranch and the development and implementation of Allotment Management Plans (AMPs) for the Shaw Canyon, Adobe, Paddy's Hole, and Coyote Canyon allotments.

These AMPs will specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values. Permits would be required for vehicular access to 28 dirt tanks and 45 miles of vehicle routes would be closed to all but permitted uses.

Restriction of vehicular use inside the designated wilderness area could reduce vandalism of rangeland developments and other problems resulting from vehicle-dependent access.

B. Amended Boundary (Proposed Action)

Under this alternative, 35,635 acres would be recommended suitable for wilderness designation and 33,126 acres would be recommended unsuitable for wilderness designation. Under this alternative, significant impacts to wilderness values could occur.

This amended boundary differs from the boundary proposed in the Draft Environmental Assessment Socorro District Wilderness (BLM 1983). This readjusted boundary alters the original recommendation by including a large area of rolling grassland south of Pelona Mountain and excluding approximately one section from the western edge of the WSA.

The boundary adjustment proposed in the draft report would have excluded much of the open rolling grasslands from the area suitable for wilderness designation. Comments received on the draft report indicated a high degree of public support for the inclusion of more of the rolling grasslands in the suitable recommendation. The public support for additional grasslands and the lack of conflict with other resource uses resulted in a refinement of the Amended Boundary Alternative.

The amended boundary would contain the area of the WSA found to have the highest potential for primitive recreation and the major ecotypes found in the original WSA. Using the Bailey (1976) - Kuchler (1966) Classification System, the amended WSA boundary would contain 4,274 acres of the original 4,945 acres of ponderosa pine/Douglas fir forest ecotype, and 10,771 of the original 11,112 acres of pinyon-juniper woodland ecotype. The grama-galleta steppe represented in the WSA would be reduced from 52,704 acres to 20,590 acres. This would be a significant reduction in the amount of pronghorn habitat represented in the WSA, but other large mammal and raptor habitat would not be significantly reduced.

Private inholdings would be reduced from 1,680 acres to 80 acres and State land and mineral estate would be reduced from 3,420 acres to 1,920 acres. This would also reduce non-Federal mineral rights from 1,640 acres of private minerals to 80 acres.

1. Impacts to Wilderness Values

The 35,635 acres within the amended boundary possess the wilderness characteristics of naturalness, outstanding opportunities for solitude, and primitive recreation. In addition to the mandatory wilderness characteristics, the area contains diverse wildlife habitat and vegetation as well as scenic and cultural resources.

The 33,126 acres outside the amended boundary possess the wilderness characteristics of naturalness and opportunities for solitude. These rolling grasslands also represent good pronghorn habitat and an expansive visual landscape.

2. Impacts to Tin Resources

Under this alternative, the impacts to tin resources would be the same types of impacts as those described under the All Wilderness Alternative. The degree of impact, however, would be less under this alternative. The opportunity for exploration and development would be forgone in an area of approximately 14,700 acres with moderate potential for tin.

3. Impacts to Livestock Grazing

The impacts on livestock operations inside the amended boundary would be the same as those described under the All Wilderness Alternative. However, the amended boundary would eliminate direct impacts to two livestock operations (Paddy's Hole and Coyote Canyon) and reduce the impacts to three other operations.

CONTINENTAL DIVIDE

ALLOTMENTS AND RANGELAND DEVELOPMENTS WITHIN THE AMENDED BOUNDARY ALTERNATIVE

Allotments	Authorized Use (Federal)	Rangeland Developments
Y Ranch	1,620 AUMs; 135 CYL ^a /	8 miles of boundary fence ½ mile of interior fence 2 dirt tanks
Shaw Canyon	2,820 AUMs; 235 CYL	6 miles of boundary fence 5 dirt tanks
Adobe Ranch	1,788 AUMs; 149 CYL	4 dirt tanks

Note: ^a/AUMs - Animal Unit Months; CYL - Cows Year Long.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 68,761 acres of public land within the Continental Divide WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Based on decisions contained in the Divide Management Framework Plan (MFP) (BLM 1983), the most probable uses of the area, if it is not designated wilderness, would be continued livestock grazing and possible mineral exploration. Management actions such as vegetation manipulation, rangeland developments, and watershed and wildlife projects would also occur. Although mineral development in the WSA is considered unlikely, it could occur if economical deposits were located. Continued vehicle use in the WSA could create new routes to such things as new rangeland developments and hunter camps. These probable land uses could produce significant impacts to wilderness values.

1. Impacts to Wilderness Values

The wilderness values of the Continental Divide WSA would not be provided with long-term Congressional protection. Commercial management of the area's timber resources, vehicular access, new rangeland developments, or mineral exploration in the WSA could reduce the area's naturalness and opportunities for solitude and recreation. The area could also be partitioned into parcels less than 5,000 acres as new access routes are constructed. The impacts to wilderness values under this alternative could be significant in the long-term.

2. Impacts to Tin Resources

There would be no impacts to mineral resources under this alternative. The area could be fully explored, new mining claims located,

and the potential for tin resources fully evaluated. Mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 Code of Federal Regulations 3809).

3. Impacts to Livestock Grazing

Under this alternative, there would be no impacts to livestock operations in the WSA.

APPENDIX 11

DEVIL'S BACKBONE WSA (NM-020-047)

I. GENERAL DESCRIPTION

A. Location

The Devil's Backbone Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 15 air miles southwest of the community of Socorro.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Puertecito Gap and South Baldy quadrangles. Both of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

The WSA is located on the western edge of the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 12 inches per year. However, the highest elevation lands (8,000+ feet) average at least 16 inches of precipitation. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA includes a portion of the rugged and broken southern flank of the Magdalena Mountains. The WSA rises precipitously out of the surrounding desert grassland and culminates in sharp, knife-like ridges and stark, rocky peaks. Elevations range from 5,400 feet to 8,100 feet with a maximum relief of 2,700 feet. The extreme topography is occasionally interspersed with small park-like areas on mountain and ridge tops, on benches, and in the saddles between peaks. Because of the rapid fall-off in relief, canyons are not well developed within the boundaries of the WSA.

C. Land Status

The WSA contains 8,904 acres of public land. (See Map 11-1 for land status within the WSA boundary.) There are no private or State inholdings within the area.

D. Access

There is no legal access to the WSA.

**DEVIL'S BACKBONE WSA
(NM-020-047)**

Proposed Action--No Action/No
Wilderness Alternative

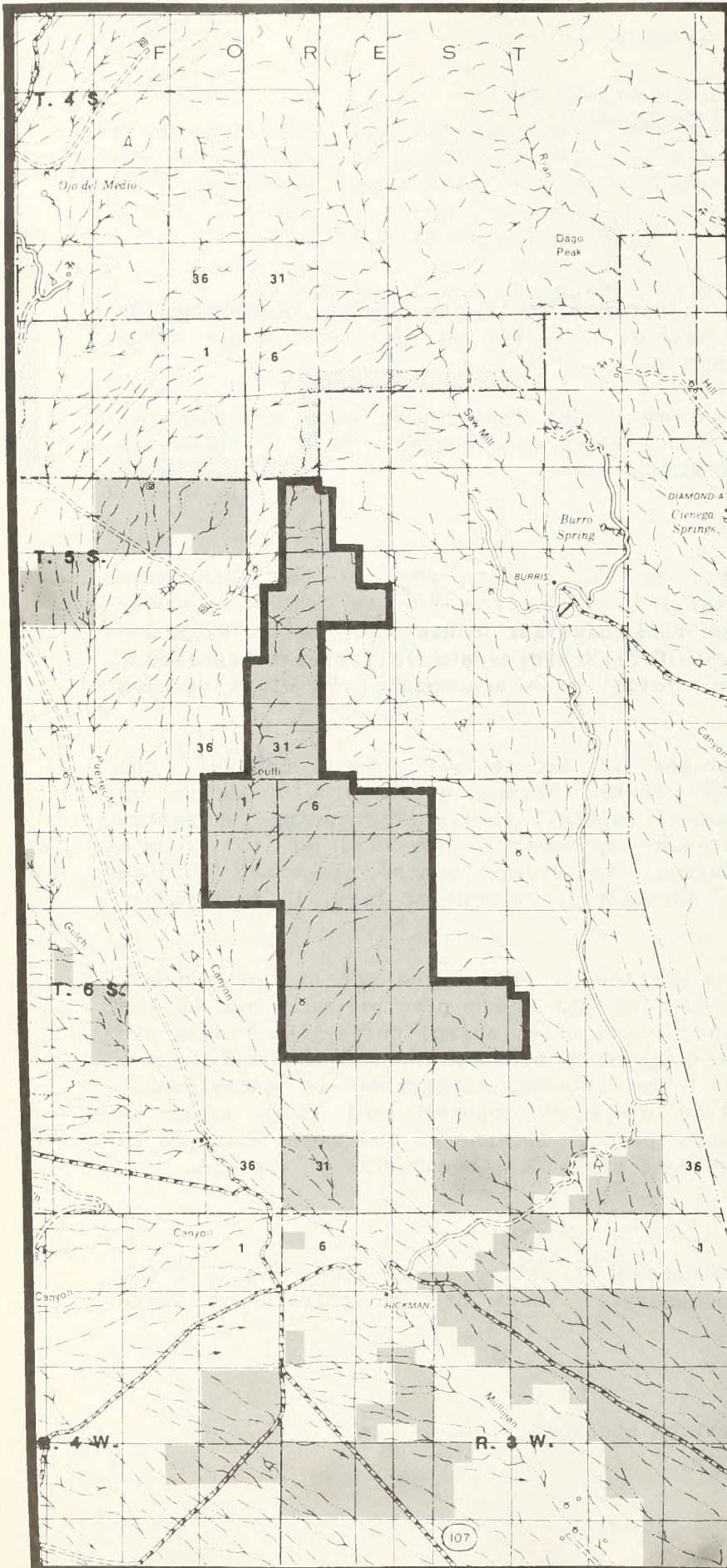
**MAP 11-1
LAND STATUS**

— WSA Boundary

■ BLM

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces
District, January 1985



E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 8,904 acres as wilderness.	°Manage 8,904 acres without wilderness protection.
-Close 5 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to 1 dirt tank, 1 mile of pipeline, and 5 wildlife water catchments.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-8,904 acres would be closed to future oil and gas leasing and mining claim location.	-8,904 acres would remain open to oil and gas leasing and mining claim location. Exploration is unlikely because of low potential.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (8,904 acres)	Wilderness protection would maintain the area's existing wilderness values.
No Action/No Wilderness (8,904 acres) (Proposed Action)	Rangeland management activities and additional vehicle routes from hunting and other uses would reduce naturalness in the long-term.

II. EXISTING RESOURCES

A. Geology

The geology of the WSA consists of mid-Tertiary volcanic rocks of the Mogollon-Datil province. The structure of the WSA is influenced by mid-Tertiary emplacement of plutons and development of cauldrons. The volcanic rocks of the WSA were formed from lavas erupted along the fractures associated with the cauldrons, each of which produced a distinctive type of lava. In addition, lavas of different compositions were erupted during different periods of time. Basaltic rocks were erupted from cauldrons active 30-39 million years ago, and rhyolite, quartz latite, and basaltic andesite were erupted 20-30 million years ago.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1-0.5 inches per year.

There are no developed ground water sources within the WSA. Ground water in Antelope Well, which is located adjacent to the WSA's southwestern boundary, is considered as representative of the area. Analysis of ground water samples taken from this well indicates it is suitable water quality for livestock purposes.

C. Soils

Approximately 85 percent of the soils in the WSA are shallow gravelly and stony loams derived from volcanic material. The remaining 15 percent are deep gravels on low ridges with small areas of deep loams in swale areas. Slopes in the WSA range from 15 to 75 percent. Rock outcrops occur on the ridge tops and along some of the steep side slopes.

D. Vegetation

1. General

The Devil's Backbone WSA lies entirely within a grassland vegetation type with plant species composition influenced by elevation. The principal plant species found in the lower elevations include black grama, poverty threawn, sideoats grama, fluffgrass, burrograss, and galleta grass. A minor percentage of the lower elevation plant composition may be attributed to woody vegetation with Apacheplume and fourwing saltbush the primary representatives of this group.

Mid-elevational plant species are primarily blue grama, hairy grama, little blue stem, Arizona fescue, mountain mahogany, shrub live-oak, sotol, and alligator juniper. In addition to the previous species, the

highest elevations are characterized by scattered stands of pinyon and ponderosa pine, as well as a few isolated Douglas fir on the highest north-facing slopes.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of four Federally-listed and seven State listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Two Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. The SHS's support 194 wildlife species, which include 50 mammal species, 50 reptile and amphibian species, and 94 resident and migratory bird species. A complete list of wildlife species found within the WSA is on file at the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Estimated deer densities for this portion of the WSA are three animals per square mile. Pronghorn are relatively abundant in the surrounding grassland areas at the base of the mountains along the WSA's periphery.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Mountain lion may occasionally range into the WSA. Common small mammals include desert cottontails, prairie dogs, black-tailed jackrabbits, white-throated woodrats, deer mice, and ground squirrels.

The mountainous topography and numerous rock outcrops are attractive to birds of prey. One golden eagle eyrie is known to be present in the WSA. Other birds which are commonly sighted include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and the western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The FWS furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries.

DEVIL'S BACKBONE

In addition, little potential habitat exists for supporting migrating individuals as the WSA lacks a sufficient prey base and available water.

F. Visual

The WSA includes the rugged, grass dominated southern flanks of the Magdalena Mountains. Topographic relief is dramatic, landscape diversity is high, and scenic vistas from within the WSA are characteristically spectacular, especially during morning and evening hours.

G. Cultural

No cultural sites have been recorded within the WSA. Seven sites have been recorded within a 12-kilometer radius of the WSA. These site types vary from lithic scatters to historic habitation sites with temporal spans ranging from 4000 B.C. to 1930's historic structures. Although cultural sites may be present within the WSA, density is anticipated to be low.

H. Air

Generally, the quality of the air within the Devil's Backbone WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when strong gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

1. Energy Minerals

As of December 1, 1984, there were no mineral leases in the WSA.

a. Oil and Gas

Paleozoic formations underlying the area include adequate source and reservoir rocks, but faulting associated with the cauldron formation and the Rio Grande rift preclude entrapment of oil and gas in significant quantities. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

The WSA is within the Socorro Peak Geothermal Leasing Area. Although the WSA has a heat flow which suggests a somewhat anomalous heat source, there is no evidence of underlying magma chambers as in the Socorro Known Geothermal Resource Area to the north. In addition, no warm springs are known to exist in the WSA. The area is considered to have low potential for geothermal resources.

c. Uranium

The Santa Fe formation could be a host for stratabound uranium deposits because it contains uranium-rich volcanic source rocks, permeable horizons, and may contain reactants such as organic matter. The WSA is partly underlain by the Santa Fe formation, but it is unlikely to be very thick. The WSA is considered to have low potential for the occurrence of uranium.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

a. Manganese

The volcanic rocks within the WSA are favorable for the occurrence of hydrothermal manganese deposits. One known manganese occurrence is within a mile of the WSA and one is within the WSA, but there has been no production from either location. The WSA was intensely prospected during the 1940's and 1950's, and no major deposits were discovered. The WSA is considered to have low potential for discovery of manganese resources.

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b. Base and Precious Metals

There has been minor gold production to the north and west of the WSA from volcanic rocks similar to those in the area. The WSA does not contain any known gold occurrences and is considered to have low potential for discovery of base and precious metals.

c. Kaolin

At Socorro Peak, to the north of the WSA, rhyolite has been hydrothermally altered to kaolin. Hydrothermal alteration of the volcanic rocks within the WSA could have caused kaolinization. The WSA is considered to have low potential for kaolin.

MINERAL RESOURCES POTENTIAL OF THE DEVIL'S BACKBONE WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Paleozoic sedimentary rocks	Low	--
Geothermal	Igneous intrusives along the Rio Grande rift	Low	--
Uranium	Stratabound deposits within the Tertiary to Quaternary Santa Fe Group	Low	--
Nonenergy Minerals			
Manganese ^{a/}	Hydrothermal deposits along shear zones and faults within Tertiary volcanics	Low	--
Base and Precious Metals	Tertiary volcanics and cauldron margins	Low	--
Kaolin	Hydrothermally altered Cenozoic volcanics	Low	--

Notes: *Acreage was not calculated for areas with low potential.

^{a/}Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

B. Watershed

The WSA is located within the Puertecito Gap watershed. It is characterized by a complex of different soils, slopes, and exposures.

Physiographic features include pediment slopes, rolling hills, and mountain slopes. The majority of soils are coarse textured with moderate to slow permeability and high runoff potential. Current erosion conditions for most of the WSA are rated as stable and slight. There are only small areas where erosion is expected to increase. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Four grazing allotments lie partially within the WSA. The VL Ranch and the Antelope Well allotments are owned and operated collectively by one permittee. The Puertecito Gap and the SO Ranch allotments are separate ranching units. All four allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
SO Ranch	3,410	656	1,760	51%
VL Ranch	2,310	420	2,200	95%
Antelope Well	9,146	1,020	40	0%
Puertecito Gap	5,331	659	4,904	91%
TOTAL			8,904	

2. Ranch Management

Permittees periodically inspect and maintain developments through the use of motor vehicles with the exception of fence maintenance, which is performed primarily on horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
SO Ranch	1½ miles of fence 1½ miles of access route 1½ miles of pipeline
VL Ranch	2½ miles of fence ¾ mile of access route
Antelope Well	¼ mile of fence
Puertecito Gap	2½ miles of fence 2½ miles of access route 1 mile of pipeline with 2 drinking troughs 1 dirt tank

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

Although the WSA is relatively close to the community of Socorro in terms of air miles, it is an isolated, difficult-to-reach area in terms of on-the-ground access.

Existing recreational use of the WSA is low except during the deer hunting season, when moderate use occurs. In addition to deer hunting, existing primitive recreational use is limited to occasional day hikes. Potential primitive recreation opportunities are discussed in Chapter IV.

The recreational use of the WSA is not expected to increase within the foreseeable future.

E. Education/Research

The WSA is not currently being utilized for any known research or educational purpose.

The WSA lies in an ecotone between various elements of the Chihuahuan Desert, the Colorado Plateau, and the Upper Gila Mountains Forest ecological provinces. Research and environmental education potential for ecosystem studies may be high.

F. Wildlife

The WSA was included in the Nogal Canyon Habitat Management Plan (BLM 1981). Five wildlife water catchments (inverted umbrella type) were installed in the WSA as proposed by the plan in 1981 and 1982. No additional habitat improvements are planned for the WSA.

The WSA has not been identified by the New Mexico Department of Game and Fish for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

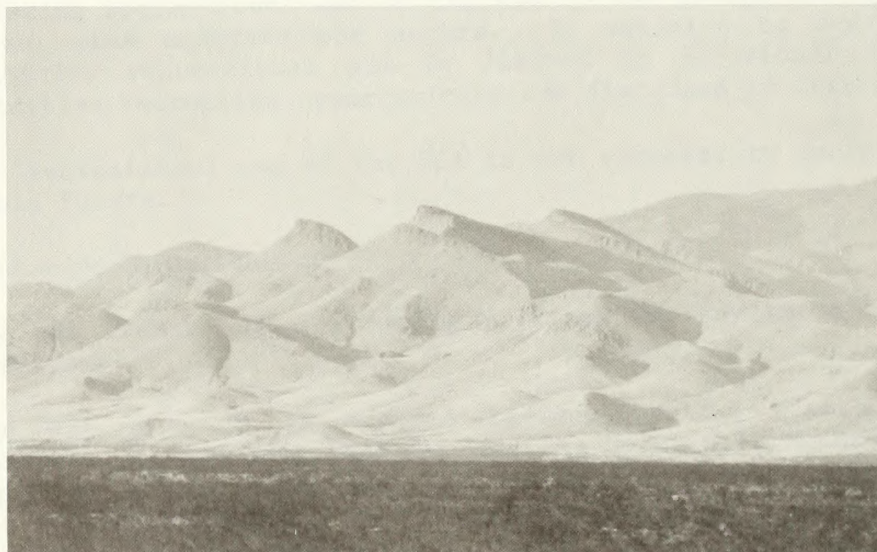
The WSA generally appears natural. However, vehicle trails and rangeland developments have impacted apparent naturalness. A water pipeline crosses the northern third of the WSA which has adversely affected the naturalness values. Installation of the pipeline resulted in considerable surface disturbance (cuts with a bulldozer are common) which would be difficult to rehabilitate. A good vehicle route is located along this pipeline. In addition, a substantially noticeable jeep trail runs south into the WSA for a distance of 1 mile. These developments reduce the naturalness of a portion of the WSA.

Other human impacts in the WSA are less significant. They include: 5 wildlife water catchment structures, 1 dirt tank, 7 miles of fences, 1 mile of pipeline with drinking troughs, and 5 miles of two-track vehicle routes. The majority of these intrusions are located along the WSA's periphery. Except for allotment fencing, the southern half and northern quarter of the WSA are natural.

Since the cumulative impacts of these developments are substantially unnoticeable when considering the entire WSA, this area marginally meets the required naturalness criterion.

b. Solitude

The WSA is isolated, little visited, difficult to access, and rugged. The topographic diversity and geographic setting provide outstanding opportunities for solitude.



Overview of the Devil's Backbone WSA.

c. Primitive and Unconfined Recreation

The Devil's Backbone WSA is not a typical primitive recreation area. There are few trees, water is scarce, and rocks, rattlesnakes, and grasses predominate. Although wildlife, relative to most desert areas, is abundant, they tend to be elusive.

The scenic values of the WSA, especially in terms of scenic vistas from within the area, are appealing. However, being a rugged desert range, the WSA is not often considered recreationally inviting. The only exception is for deer hunting. This situation notwithstanding, the WSA can provide visitors with the opportunity to experience a natural desert mountain environment suited to day hiking, backpacking, horseback riding, nature and landscape photography, natural history activities (e.g., birdwatching) and environmental exploration. The area is most attractive to these recreational pursuits during off-season (late fall and winter).

2. Special Features

There are no special features within the WSA.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Designation of the WSA as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Devil's Backbone WSA as being in the Chihuahuan Desert Province and the Upper Gila Mountains Forest Province with a potential natural vegetation of 3,904 acres of grama-tobosa shrubsteppe, 4,000 acres of grama-galleta steppe, and 1,000 acres of pinyon-juniper woodland.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs), are located within 5 hours driving time of the WSA. Albuquerque and Las Cruces, New Mexico, are within 3 hours and El Paso, Texas, is within 4 hours driving time.

B. Manageability

Factors which affect the manageability of the Devil's Backbone WSA include location and configuration of the boundary, and existing rangeland developments.

The WSA boundary is set entirely on legal subdivision lines. The boundary excludes the rugged southern flank of the Magdalena Mountains.

DEVIL'S BACKBONE

From a topographic standpoint, this boundary is arbitrary and difficult to locate on-the-ground. Land acquisition to consolidate the WSA's boundary would be desirable to improve on-the-ground identification of the boundary. The WSA is relatively small and much of its northern half is a mile wide or less. These factors negatively impact the BLM's ability to manage the area as wilderness.

A buried water pipeline and associated vehicle route bisect the northern third of the WSA. Because of the rugged rocky terrain of the WSA, the maintenance frequency of this pipeline is high. This pipeline and associated maintenance route reduce the BLM's ability to manage this portion of the WSA for naturalness or outstanding opportunities for solitude.

While none of these factors in themselves render the area unmanageable, the cumulative effects reduce the BLM's ability to manage the WSA as wilderness.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has indicated both support for and opposition to designation of the Devil's Backbone WSA as a wilderness area. Reasons cited have concentrated on the WSA's naturalness and solitude values.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 17 letters were received. Nine respondents supported wilderness designation for Devil's Backbone. Reasons for this support centered around the area's wilderness and wildlife values. The BLM's assessment of management difficulties resulting from the configuration of the boundary was also questioned, and it was noted that the BLM erred in its statement that wilderness designation would require the BLM to attempt to acquire adjacent lands to produce a topographically identifiable land unit with recognizable boundaries.

Eight respondents opposed wilderness designation for the Devil's Backbone WSA. Among the reasons cited were potential mineral resources, including manganese and geothermal potential, and that the area was too confined and encroached upon by man-made intrusions to provide a high quality wilderness experience. Agreement was also expressed concerning BLM's assessment of the manageability of the area.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, and education/research are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/ No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary environmental issue identified for this WSA is the quality of the area's wilderness values.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 8,904 acres of public land within the Devil's Backbone WSA would be recommended suitable for wilderness designation. (See Map 11-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and management would maintain the area's wilderness values. Necessary vehicular access to rangeland developments could reduce naturalness and opportunities for solitude.

2. Impacts to Livestock Grazing

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels. Existing rangeland developments would be retained so long as they are necessary to ranch operations. Permits would be required for mechanized access to 1 dirt tank and 1 mile of buried pipeline for necessary maintenance purposes.

B. No Action/No Wilderness (Proposed Action)

Under the No Action/No Wilderness Alternative, the Devil's Backbone WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing use would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued low levels of recreational use, livestock grazing, and mineral exploration.

1. Impacts to Wilderness Values

The wilderness values of Devil's Backbone would not be provided with long-term Congressional protection. In the long-term, additional rangeland management actions, and continued vehicle use in support of ranching and recreational activities could reduce naturalness.

2. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

APPENDIX 12

EAGLE PEAK WSA (NM-020-019)

I. GENERAL DESCRIPTION

A. Location

The Eagle Peak Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 6 air miles west of Quemado.

The U.S. Geological Survey topographic maps covering the WSA are the Armstrong Canyon, Blaines Lake, Lake Armijo, Tejana Mesa, Tejana Mesa SW, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

Eagle Peak has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September, primarily from brief but often heavy thundershowers. Winter is usually the driest season. The WSA receives 9 to 14 inches of precipitation annually.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Eagle Peak WSA consists of rolling topography broken by sandstone and basalt mesas and canyons. Volcanic features, including large cinder cones and associated lava flows, are also present and result in a topographically diverse WSA. Elevations range from 6,400 feet to 7,550 feet, with the highest elevations occurring in the eastern portion of the WSA.

C. Land Status

The WSA contains 32,748 acres of public land. Inholdings within the WSA consist of 80 acres of State land, 360 acres of private land, and 5,640 acres of BLM surface/State subsurface mineral estate. (See Map 12-1 for land status.)

D. Access

The WSA has good physical and legal access. State Highway 32 is adjacent to portions of the northern boundary of the WSA and County Road

EAGLE PEAK WSA (NM-020-019 MAP 12 AND MESITA BLANCA WSA (NM-020-018) MAP 15

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

MAP 12-1 AND MAP 15-1


LAND STATUS


<input type="checkbox"/>	BLM
<input type="checkbox"/> s	Stat
<input type="checkbox"/> p	Priv
<input type="checkbox"/>	WSA

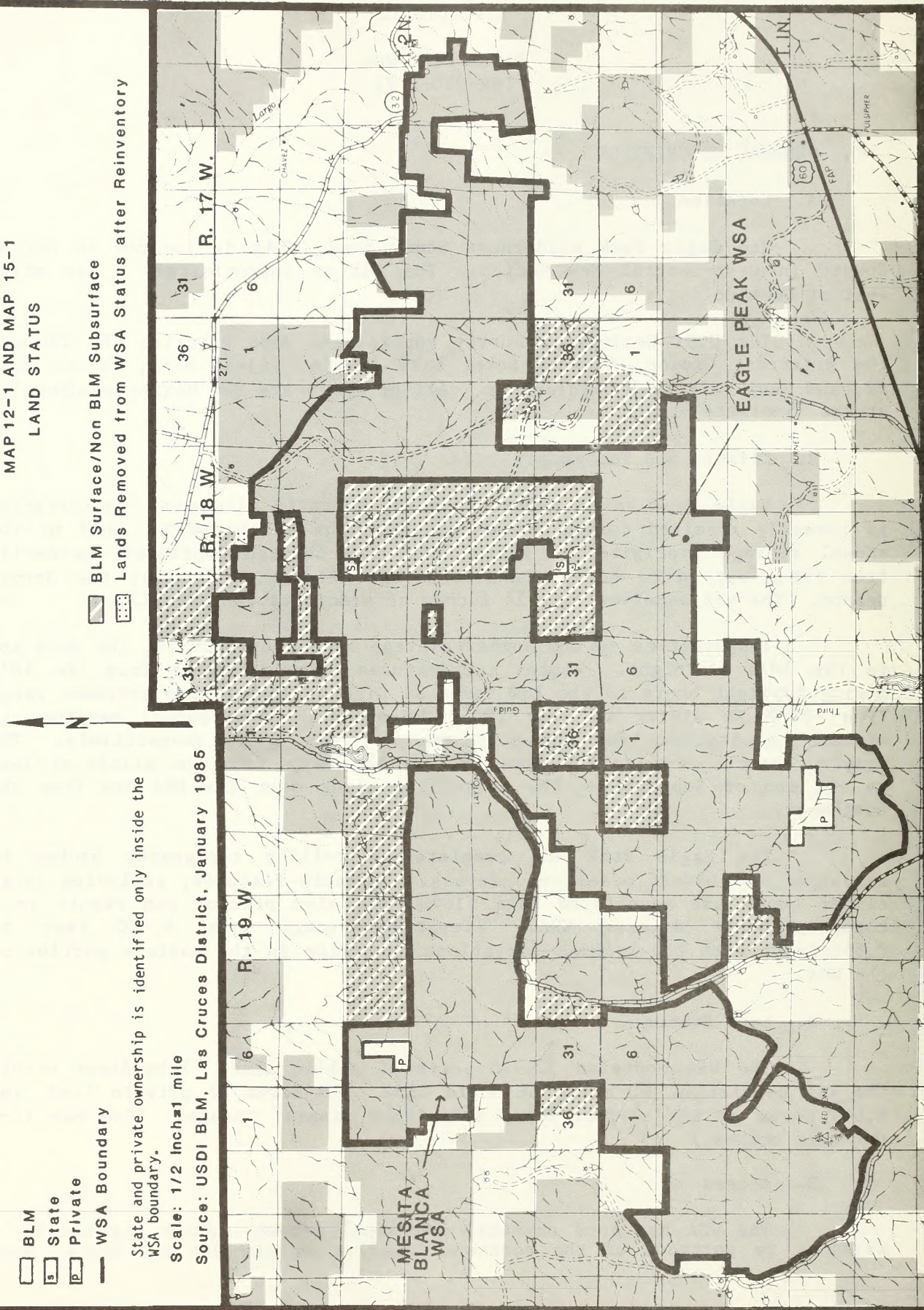
State and private ownership is identified only inside the WSA boundary.

Scale: 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces District, January 1985

 BLM Surface/Non BLM Subsurface

 Lands Removed from WSA Status after Reinventory



A007 parallels the western edge of the WSA. Numerous unimproved ranch access routes traverse the WSA from north to south and east to west.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 32,748 acres as wilderness.	°Manage 32,748 acres without wilderness protection.
-Close 45 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to maintain 8 dirt tanks, 1 windmill, 2 storage tanks, and 3 miles of pipeline and drinking troughs.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-Woodcutting would not be permitted.	-Woodcutting would be permitted.
-32,748 acres would be closed to energy minerals leasing.	-32,748 acres would remain open to energy minerals leasing, mining claim location, and mineral material sales.
-32,748 acres would be closed to mining claim location. The closed area includes 27,100 acres with moderate potential for uranium.	
-32,748 acres would be closed to mineral material sales. The closed area includes 2,500 acres with moderate potential for sand and gravel and 1,500 acres with moderate potential for cinders.	
-Attempts would be made to acquire 5,640 acres of State-owned mineral rights and 440 acres of surface inholdings within the WSA.	-No special attempts would be made to acquire State and private lands or mineral rights.
-Management activities proposed in the Mesa Ranch watershed plan would be restricted by the Wilderness Management Plan and subject to the BLM Director's approval.	-Management activities proposed in the Mesa Ranch watershed plan could be implemented.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues
	Wilderness Values
All Wilderness (32,748 acres)	Wilderness protection would maintain the area's existing low quality naturalness, outstanding opportunities for solitude, outstanding opportunities for sightseeing, hiking, and camping, and special archaeological and geological features.
No Action/No Wilderness (32,748 acres) (Proposed Action)	New rangeland developments, fuelwood sales, unauthorized woodcutting, recreational use, and possibly coal development in the region would significantly reduce naturalness and opportunities for solitude in the long-term.

II. EXISTING RESOURCES

A. Geology

The Eagle Peak WSA lies within the southern portion of the Colorado Plateau. Gently southeastward-dipping sediments of Cretaceous and Tertiary age dominate the surface of the WSA. Natural erosion of these sediments has produced mesas of low relief throughout the area. Flows of Quaternary basalts and numerous related cinder cones occasionally cap the older formations within the vicinity. Thin Quaternary alluvium also forms the surface of a significant portion of the central part of the WSA.

Exploration wells drilled within the region indicate that Precambrian granite, Permian sediments, and Triassic sediments occur beneath the surficial deposits.

In general, sedimentary rocks which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then, in part, covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

The Eagle Peak WSA is located in the Little Colorado River sub-basin. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the mainstreams. Earthen type reservoirs designed to catch and store runoff normally contain water 6 months of the year.

The source of all water in the Little Colorado sub-basin is precipitation. No ground water is known to enter the basin from outside areas. Most rock formations present will yield enough ground water locally to supply stock needs. The alluvium of stream valleys and bolson fill are the most important ground water reservoirs in the WSA. There is a large volume of ground water available for development in the Little Colorado sub-basin, but is so distributed as to make recovery in large amounts uneconomical. In general, ground water from stream-valley alluvium and bolson deposits is of good quality and suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Ground water from intrusive and volcanic rocks is generally of good quality but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, ground water is usually highly mineralized.

C. Soils

The soils in Eagle Peak were formed in a variety of parent materials, including sandstone, shale, basalt, volcanic ash, and cinders.

Approximately one-third of the area is composed of soils which formed in volcanic ash or cinders. These soils are on gently sloping to rolling slopes and have a slight water erosion hazard.



Sandstone Mesas.

Another one-third of the area has soils that developed over basalt or sandstone. The water erosion hazard on these soils is slight except on steep slopes.

There are two small areas of erosive soils in the WSA. The fine textured soils that occur in broad swales and drainage ways and the soils on steep rocky side slopes of mesas, badlands, and canyons have a high water erosion hazard and would be easily damaged by surface disturbance.

D. Vegetation

1. General

In the Eagle Peak WSA, the following Standard Habitat Sites (SHS's) are present:

Pinyon-Juniper Hill (20,570 acres)

The pinyon-juniper hill SHS occurs primarily on hills and steep slopes and in places, is found on flats next to the slopes. Principal vegetation, other than pinyon-juniper, includes blue grama, mountain

mahogany, oak, and rubber rabbitbrush, with fringed sage, winterfat, and bottlebrush squirreltail also present. Animals commonly found in these areas include cottontails, black-tailed jackrabbits, coyotes, mule deer, striped skunks, kit foxes, red-tailed hawks, and golden eagles.

Blue Grama-Snakeweed Hill (10,100 acres)

The blue grama-snakeweed hill SHS is primarily found on lower hills and in openings interspersed within the pinyon-juniper hill SHS. The principal vegetation includes blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Other plant species present include fringed sage, winterfat, galleta, Apacheplume, oak, and scattered pinyon and juniper. The aspect is usually short and mid-grasses, with scattered low shrubs. Common animals in this area include black-tailed jackrabbits, coyotes, kit foxes, pronghorn, red-tailed hawks, and golden eagles.

Russian Thistle-Alkali Sacaton Valley (2,078 acres)

This SHS is found primarily in large, flat bottomlands and low spots. Principal vegetation, other than Russian thistle and alkali sacaton, includes fringed sage, winterfat, bottlebrush squirreltail, and annual forbs. Common animals in this area include cottontails, black-tailed jackrabbits, coyotes, and pronghorn.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of eight threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Eagle Peak WSA supports approximately 306 wildlife species including 57 reptile and amphibian species, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species occurring in the Eagle Peak WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Fauna Species

In addition to the characteristic wildlife species present, the WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federal endangered species. Wintering bald eagles are known to occur in the WSA.

EAGLE PEAK

F. Visual

This large WSA contains scenery rated as Visual Resource Management (VRM) Classes II and III.

The scenery in most of the WSA has been designated as VRM Class III. It is an area of mesas and open grasslands with visual interest enhanced by volcanic features and sandstone cliffs.

The VRM Class II scenery in the Cottonwood Canyon area is derived from the eroded sandstone, which has produced a visual environment characterized by vertical relief and colorful erosional features.

G. Cultural

Portions of the WSA were the subject of a Class II Cultural Resource survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 6,400 acres in the WSA, identified 63 archaeological sites ranging from petroglyphs to campsites and villages. These sites represent human habitation from the Archaic period (6000 BC to Christian Era) to the homesteading era. Based on the results of the Class II survey and project specific inventories, cultural resource values in the WSA are considered to be high.

The cultural values of the WSA are enhanced considerably by the presence of Zuni Salt Lake immediately north of the WSA. The Lake has long been a source of pure salt. Early man probably visited the site; however, whether it served as his salt supply is unknown. Indian ruins dating back 1,000 years have been found in the area, which give evidence of the prehistoric importance of the area. Because of the availability of this nutritional necessity, the Indians of the Southwest, including the Acoma, Laguna, Zuni, Apache, and Navajo, have built up extensive religious beliefs concerning the area. Many tribes continue to make pilgrimages to the Lake to gather domestic salt and to worship. Among the deities believed to inhabit the area are the Twin War Gods and Salt Mother. With the arrival of the Spaniards in 1540, the Lake became known historically when they praised the quality of the salt in their journals. Zuni Salt Lake, in addition to being a source of salt and ceremonial significance, was considered to be neutral ground, regardless of current hostilities.

H. Air

Generally, the quality of air within the Eagle Peak WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

This situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resources potential of the lands within the WSA is shown on Map 12-2 and the location of lands under mineral leases is shown on Map 12-3.

MINERAL RESOURCES POTENTIAL OF THE EAGLE PEAK WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Paleozoic and Mesozoic continental and marine sedimentary rocks	Low	--
Coal	Mesaverde Group continental margin sedimentary rocks	Low	--
Uranium	Sandstone channel and unconformity-related deposits within Tertiary and Cretaceous sedimentary rocks	Moderate	27,100
Nonenergy Minerals			
Sand and Gravel	Quaternary and Tertiary fluvial sediments	Moderate	2,500
Cinders	Quaternary basaltic cinder cones	Moderate	1,500

Note: *Acreage was not calculated for areas with low potential.

1. Energy Minerals

As of December 1, 1984, there were two post-Federal Land Policy and Management Act (FLPMA) oil and gas leases in the WSA.





a. Oil and Gas

Ten exploratory oil and gas wells and deep water wells have been drilled within the Quemado area; however, none of them were within the WSA. This local drilling verified that a sequence of oil and gas reservoir and possible source rocks occurs in the area. Available information suggests a low potential for oil and gas resources in the WSA. Any positive evidence of oil and gas in the region could stimulate exploration attempts within the WSA.

EAGLE PEAK WSA (NM-020-019 MAP 12 AND MESITA BLANCA WSA (NM-020-018) MAP 15

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

MAP 12-2 AND MAP 15-2
MINERAL RESOURCE POTENTIAL*


-  BLM
-  State
-  Private
-  WSA Boundary

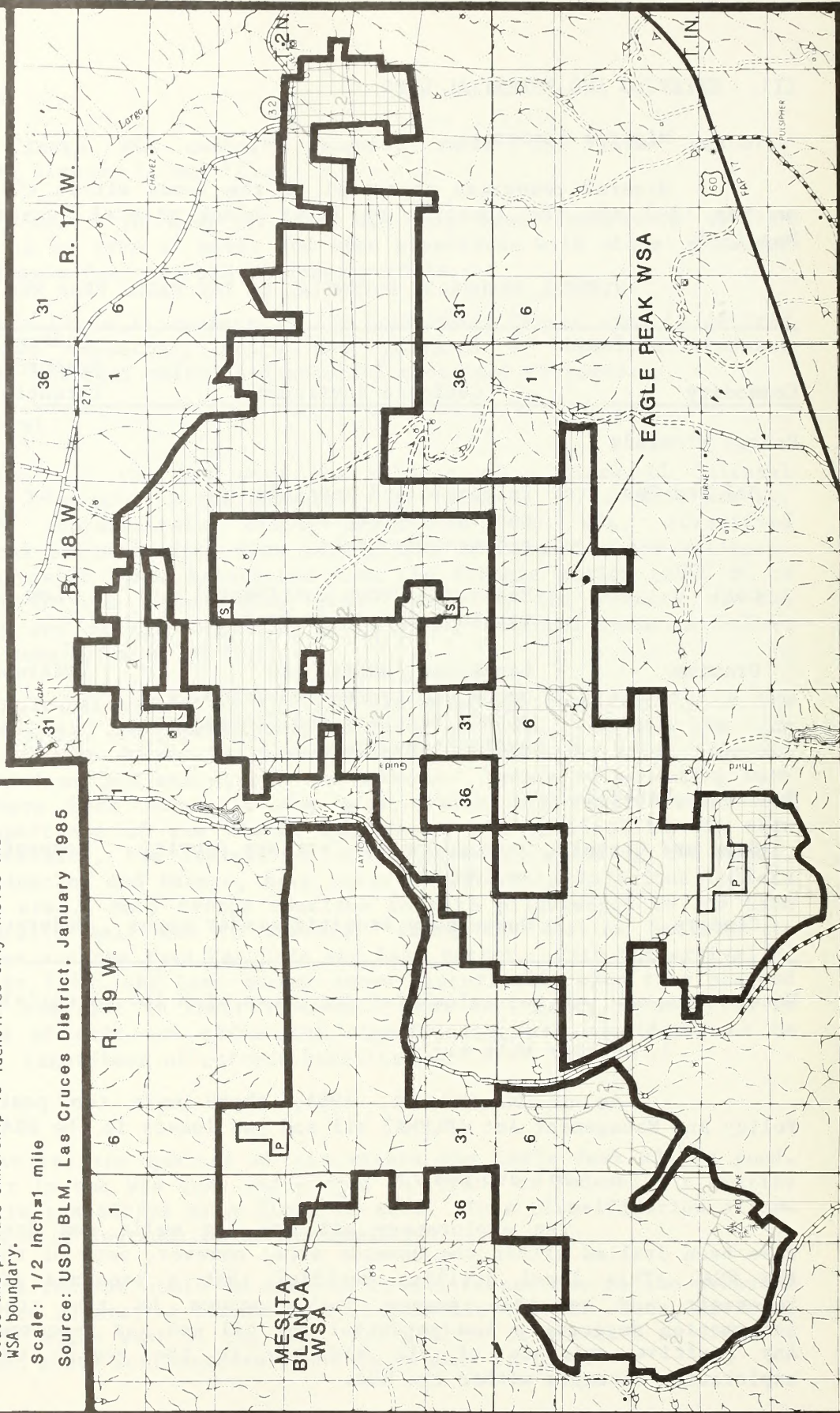
State and private ownership is identified only inside the WSA boundary.

Scale: 1/2 Inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

*Areas of high (1) and moderate (2) mineral potential are shown for lands within the WSA; the potential may extend outside the WSA boundary. Areas of low potential are not shown.





-  Sand and Gravel
-  Uranium
-  Cinders



EAGLE PEAK WSA (NM-020-019) MAP 12 AND MESITA BLANCA WSA (NM-020-018) MAP 15

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

MAP 12-3 AND MAP 15-3
MINING CLAIMS AND MINERAL LEASES*

-  BLM
-  State
-  Private
-  WSA Boundary

State and private ownership is identified only inside the WSA boundary.

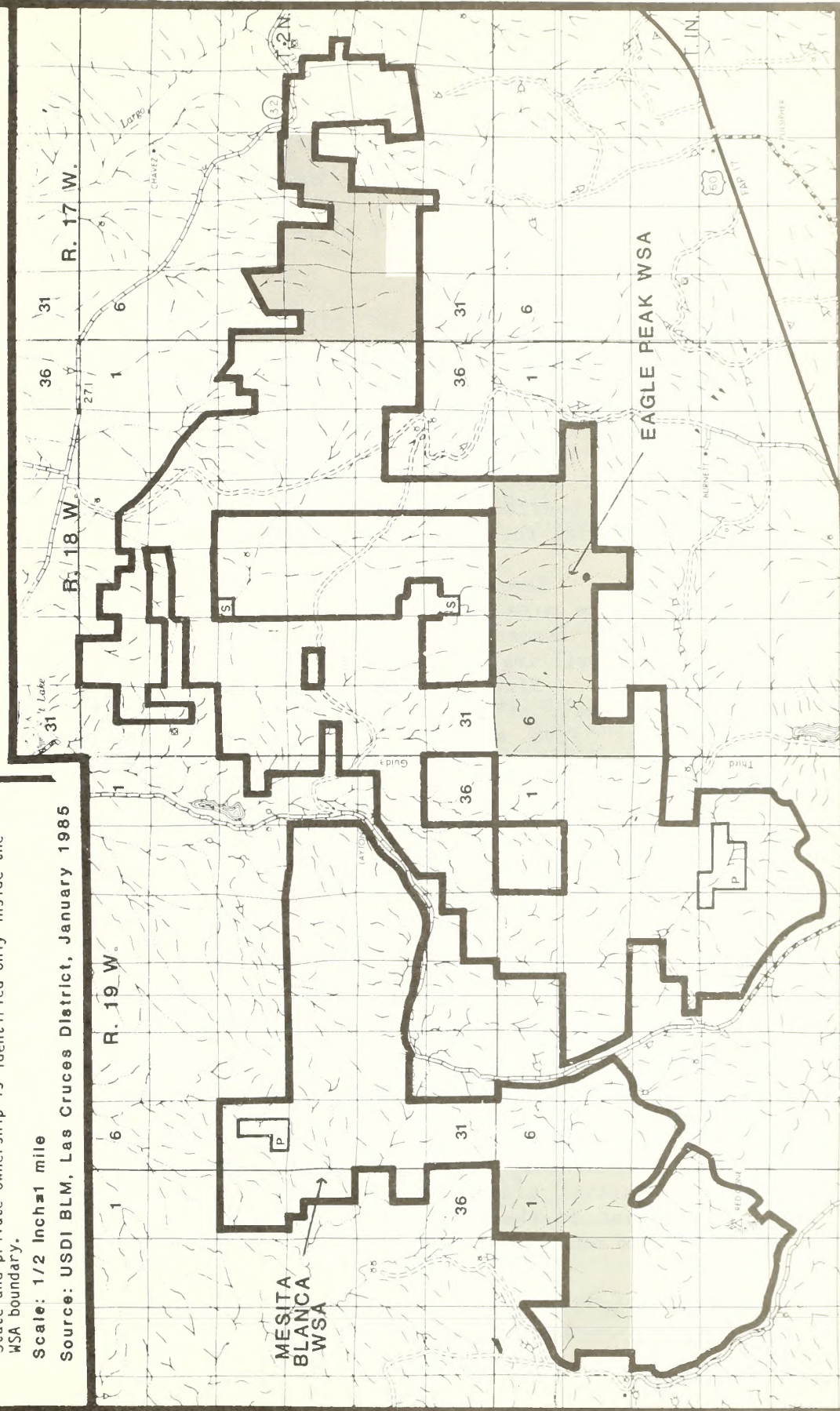
Scale: 1/2 Inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

 Post-FLPMA Oil and Gas Leases

FLPMA was passed October 21, 1976.

*No mining claims were recorded with the BLM within the WSA as of September 17, 1984.



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b. Coal

Private and government exploration in areas 15 to 20 miles northeast of the WSA have identified possible economic coal reserves within the Mesaverde group. Although the Mesaverde group occurs shallowly in much of the WSA, recent information indicates that the potential for economic coal deposits is low because if present, the coal would occur in thin beds at depth.

c. Uranium

Within the WSA, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration within and adjacent to the WSA has identified sub-economic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate potential for uranium resources.

Several hundred mining claims were recorded in 1978 with the BLM for the area along and within the southeastern margin of the WSA where the Baca formation crops out. The Energy Reserves Group and Teton Exploration Drilling located these claims for potential uranium mineralization. Nine uranium test holes were drilled within the southernmost group of claims, four of which were along the southern border of the WSA. Five additional test holes were also drilled within the southeast-central portion of the WSA. This exploration, which occurred between 1979 and 1981, detected sub-economic uranium mineralization. If economic and political conditions again favor the uranium industry, the region containing the WSA could be a target for exploration.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

a. Sand and Gravel

Thick sand and gravel deposits occur locally within the Quaternary alluvium, the Baca formation, and the volcanic sediment facies of the Datil formation. These deposits comprise a large portion of the WSA's surface. The majority of the material consists of gravels and cobbles of quartzites, quartzose sandstones, arkosic sandstones, and assorted volcanic rocks. Potential gravel resources could possibly be needed for improving roads adjacent to the WSA. A moderate potential for the identification of economic sand and gravel deposits exists within the WSA.

b. Cinders

There are several excellent sources of cinders within the WSA. These cinder cones are associated with flows of Quaternary basalts.

The WSA's cinder deposits are of excellent quality and could be used for any of the typical lightweight aggregate or landscaping purposes associated with this type of material. The excellent cinder deposits within the WSA have poor access which reduces their economic significance. Development of these resources would depend on future population increases within the vicinity due to their high bulk, low value nature. A moderate potential exists for cinder resources in the WSA.

B. Watershed

Eagle Peak is located within the Blaines Lake and Quemado watersheds. All lands within these watersheds have been classified as productive areas. Most of the area has been rated as being in the moderate erosion class, although some areas in the WSA are in a critical erosion class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. A watershed plan will be developed on portions of the Mesa Ranch and watershed work will be done to improve the critical erosion areas to moderate. Runoff averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Eagle Peak WSA. The four allotments graze livestock in the WSA and utilize a year-round cow/calf operation. The Rancho Alegre Cattle Company and Eager-Red Hill allotments have approved Allotment Management Plans (AMP) in cooperation with the BLM. These AMPs consist of planned rangeland developments and scheduled livestock moves. Most of the planned rangeland developments have been constructed. The Largo Creek and Mesa Ranch allotments graze livestock in the WSA according to forage availability.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Rancho Alegre	79,578	11,880	26,820	34%
Eager-Red Hill	5,220	864	2,230	43%
Largo Creek	5,059	708	770	15%
Mesa Ranch	3,599	504	2,929	81%
TOTAL			32,748	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage condition, supplementing salt or protein, livestock water availability, breaking ice on livestock waters, and

EAGLE PEAK

performing maintenance on fences, dirt tanks, a windmill, and pipelines. Most of the daily ranch operation is conducted using pickups or other vehicles. Normal maintenance of various rangeland developments would include motorized vehicles such as a pickup truck, a bulldozer to clean the dirt tanks, a tractor with backhoe to repair or replace pipeline, and a drill rig to maintain the windmill.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

<u>Allotment Name</u>	<u>Type of Development</u>
Rancho Allegre	16½ miles of interior fence 11 miles of boundary fence 5 dirt tanks 3 miles of pipeline 2-5,000 gallon storage tanks 2 drinking troughs
Eager-Red Hill	2 dirt tanks 1 windmill 2 drinking troughs 6 miles of fence
Largo Creek	1 dirt tank
Mesa Ranch	4 miles of boundary fence

Note: ^{a/}Information shown in tables reflects only Federal Acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned within the WSA at this time.

D. Timber Harvest

The Eagle Peak WSA is generally of an open character with scattered pinyon and juniper woodlands occurring on the ridges, mesa sides, and hilly areas. The woodlands are composed primarily of one-seed juniper, except in the southern portions of the WSA where pinyon pine is mixed with the juniper. Most of these woodlands are of small size and volume, being in open stands and occurring on the steeper terrain of the area.

Past use of the area's woodland resources has been limited primarily to one area ½ mile southeast of the Eagle Peak WSA just north of the Burnett Ranch Headquarters.

Eagle Peak contains approximately 8,430 cords of standing greenwood. For this reason, the WSA has a potential for firewood and post cutting. This potential is enhanced by the easy accessibility afforded by the numerous vehicle routes which exist in the area.

Since the woodcutting area was authorized southeast of the WSA boundary, people are familiar with this portion of the WSA. As a result, illegal woodcutting has taken place throughout the area. Both illegal and legal woodcutting trends, as supported from past sales and contacts, will continue to increase. Controlling the growing illegal use of the woodlands may become more of a management problem than the authorization of proper use.

E. Recreation

Current recreational use is limited primarily to deer hunting, rockhounding, and some exploring. Recreational off-road vehicle (ORV) use is also associated with these activities. Zuni Salt Lake, adjacent to the northern portion of the WSA, draws sightseers and those interested in the history of the area.

The area offers opportunities for backpacking, hiking, camping, nature photography, and other activities. Presently, there is little recreational use in the WSA. This is probably the result of limited public knowledge of the recreational resources present, uncertainty over land ownership, and distance from population centers.

ORV and other recreational uses in this area may increase in the future if coal development occurs in the Fence Lake area north of the WSA. If this development occurs, it is anticipated that the Quemado area would experience an increase in vehicle-dependent recreation.

F. Education/Research

The cultural resources and volcanic features present in the WSA offer opportunities for archaeological and geological research.

Opportunities for environmental education exist based on the wildlife, vegetation, geology, and cultural resources present in the WSA. The distance from population centers, however, would probably limit the direct use of the area for environmental education.

G. Native American

As was noted earlier, Zuni Salt Lake (on private land north of the WSA) is an important Native American religious site. However, it is not known at this time if religious uses centered at Zuni Salt Lake also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land within the WSA withdrawn.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of the Mandatory Wilderness Characteristics

a. Naturalness

The Eagle Peak WSA has diverse landforms ranging from sandstone mesas and volcanic cinder cones to gently rolling hills and lava flows. Vegetation in the WSA is characterized by scattered pinyon-juniper woodlands interspersed among short grasslands.

The human impacts in the WSA consist of rangeland developments and access routes which support livestock grazing. The Eagle Peak WSA contains 12 livestock watering structures (dirt tanks and drinking troughs along pipelines), 2 storage tanks, 1 windmill, about 38 miles of fences, and 3 miles of inconspicuous buried pipeline. Access to these rangeland developments is provided by 45 miles of vehicle routes. These vehicle routes vary in quality from dim two-track ways to well used major ranch access routes.

The impacts in this WSA are not typically screened from view by topography or vegetation. This lack of screening causes existing impacts to extend their visual influence over a wide area.

Because impacted areas occur in all but the extreme eastern portion of the WSA, there appears to be little potential for boundary adjustments to improve the naturalness of the WSA.

The cumulative effect of human impacts is considered to reduce the level of perceived naturalness in the Eagle Peak WSA.

b. Solitude

The Eagle Peak WSA has numerous topographic features and wooded areas which provide outstanding opportunities for solitude. These opportunities are greatest in the wooded mesas of the extreme eastern part of the WSA and the mesas and canyons in the southern and southwestern portions of the WSA.

Higher elevations of the WSA, because of the greater visibility afforded, offer less potential for avoiding the evidence of human activities than the well-screened canyons and mesa edges.

c. Primitive and Unconfined Recreation

Outstanding opportunities for primitive recreation in the WSA consist primarily of sightseeing, hiking, and camping. Sightseeing opportunities are provided by the geology of the area, which includes sandstone mesas and volcanic cinder cones. The geology of the area also provides some rockhounding opportunities for small pieces of petrified wood

and agate. Large raptors, including golden eagles, add interest to sightseeing in the WSA. Deer and pronghorn also may be seen, but are not common. The cultural resources of the area, especially the rock art which can be found on many of the sandstone mesas, also provide sightseeing opportunities. The geology and wildlife add interest to hiking or camping in the WSA. Extended camping would be limited, however, by the lack of water other than livestock waters for recreational users. Deer hunting occurs in the WSA, but is limited by low populations of mule deer.

2. Special Features

The Eagle Peak WSA contains significant archaeological values representing human habitation since archaic times (approximately 6000 BC). Volcanic features, including a series of cinder cones, also add significance to the area. The WSA also provides habitat which supports year-round use by golden eagles and occasional use by wintering bald eagles.

3. Multiple Resource Benefits

The Eagle Peak WSA contains a variety of natural values, including archaeological resources, interesting geologic features, large raptor habitat, and watershed values.

Congressional designation as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would the administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Eagle Peak WSA as being in the Colorado Plateau Province with a potential natural vegetation of 11,572 acres of grama-galleta steppe and 21,176 acres of pinyon-juniper woodland.

b. Distance From Population Centers

The WSA is within 5 hours driving time from Albuquerque and 5½ hours driving time from Las Cruces, New Mexico.

B. Manageability

Subsurface ownership patterns present a significant problem for management of the WSA as wilderness. Mineral rights under 5,640 acres of public land are in State ownership. These split estate lands are concentrated in the center of the WSA, but are also found in scattered sections throughout the WSA. The extent and location of these inholdings produce a WSA with extremely awkward boundaries.

The impacts to wilderness values in the WSA from providing access to these subsurface inholdings is difficult to assess at this time.

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However, incompatible uses are expected to occur because private rights exist in an area believed to have moderate uranium potential and an excellent source of cinders.

Surface ownership patterns include 360 acres of private and 80 acres of State land inholdings. While not as extensive as the subsurface inholdings, providing access to these surface inholdings would also create manageability problems.

A large number of rangeland developments are located in the WSA. The BLM Wilderness Management Policy allows for the continued existence and necessary maintenance of rangeland developments. Necessary access routes for ranch operations and for the maintenance of existing rangeland developments will also have to be determined. Some unused access routes would revegetate, thereby improving the impression of naturalness in the WSA.

The general lack of topographic barriers to vehicular access and the number of vehicle routes which presently provide access into the WSA will complicate wilderness management. Some routes could be physically closed, but it would require extensive patrolling and public information to completely eliminate unauthorized uses, such as ORVing or illegal woodcutting, from the WSA.

Manageability of the area as wilderness would be enhanced through the acquisition of 5,640 acres of State-owned mineral rights, 80 acres of State-owned surface lands, and 360 acres of private surface inholdings. This would reduce the possibility of incompatible uses occurring in the WSA if it is designated as wilderness, and reduce problems arising from providing reasonable access to these inholdings.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

This report was prepared after considering public comment obtained from a variety of sources, including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement.

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited included: the type of landforms and the expanse of grassland in the WSA would add diversity to the wilderness preservation system; the need to preserve significant raptor habitat and good pronghorn habitat; and high cultural resource values and scenic values. It was also noted that existing livestock operations would continue under wilderness management.

Opposition to wilderness designation of the Eagle Peak WSA has centered around conflicts with mineral and livestock interests. A large number of Catron County residents are opposed to additional wilderness areas in the County. Reasons for opposition included: the lack of naturalness due to rangeland developments; the lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on livestock operations; and the impacts of wilderness designation on future economic development of Catron County.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 19 letters and 52 coupons were received.

Fourteen letters and the coupons indicated disagreement with the Area Manager's unsuitable recommendation. Among the reasons cited in support of designation were the benefits of wilderness to wildlife and the additional protection which wilderness designation would provide to cultural resources inside the WSA and to Zuni Salt Lake, which is near the northern boundary of the WSA. There was also disagreement with the assessment of the manageability problems resulting from the extensive mineral inholdings in the WSA.

Five letters concurred with the unsuitable recommendation. These respondents cited the man-made features in the WSA and noted that the natural setting of the WSA has been and will continue to be significantly disturbed by ranching and probable mineral development activities. The mineral potential of the WSA was also a prominent reason for opposition to designation. One respondent, the holder of a State coal lease adjacent to the northeast boundary of the WSA, commented that drilling indicates that the leased property as well as the WSA has the potential for future coal development.

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B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, and timber harvest are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.
An Amended Boundary Alternative	After evaluating possible boundary adjustments, it was determined that no logical boundary could remove areas of marginal naturalness and areas of subsurface mineral estate inholdings without severely impacting wilderness values and manageability.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Saleable Minerals (Cinders, Sand and Gravel)	Within this WSA, there are 2,500 acres with moderate potential for sand and gravel and 1,500 acres with moderate potential for cinders. The impacts on these resources would not be significant because of the availability of similar materials elsewhere; therefore, a detailed analysis is not included.
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for this WSA are the quality of the area's wilderness values, possible manageability problems associated with access and development of inholdings, and mineral potential. Although 27,100 acres in the Eagle Peak WSA have moderate potential for uranium, impacts to uranium resources are not considered significant because large areas in the State have similar or better potential and are open to exploration and development. This issue was selected for detailed analysis, however, because of the area's moderate potential and because mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 32,748 acres of public land within the Eagle Peak WSA would be recommended suitable for wilderness designation. (See Map 12-1 for WSA boundary.)

1. Impacts to Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. However, several factors could impact the BLM's ability to manage the Eagle Peak WSA as wilderness in the long-term. Access to inholdings and existing rangeland developments could reduce the area's apparent naturalness and opportunities for solitude.

2. Impacts to Uranium Resources

Although approximately 27,100 acres in the Eagle Peak WSA have moderate potential for uranium, there are no existing mining claims in the area. It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Eagle Peak WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full uranium potential of the area could not be assessed. However, the impacts to uranium resources are not considered significant because large areas in the State of similar or better potential would remain open to exploration and development.

3. Impacts to Livestock Grazing

The WSA presently supports 5,102 animal unit months; these grazing levels would not be impacted by wilderness designation. Grazing is a permissible and compatible activity in wilderness; however, necessary

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access to maintain 8 dirt tanks, 1 windmill, 2 storage tanks, and 3 miles of pipeline and drinking troughs would be by permit only.

It is anticipated that few additional rangeland developments would be needed to improve grazing management in the WSA. For this reason, wilderness designation would not have significant impacts on livestock grazing in the WSA. It should also be noted that in many cases, wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from limitations on design and placement rather than the prohibition of new rangeland developments.

Wilderness designation would result in the modification of the current Allotment Management Plan (AMP) for Eager-Red Hill and the development and implementation of AMPs for the Mesa Ranch and Largo Creek allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

Restrictions on vehicle use inside the designated area could reduce vandalism of rangeland developments and other problems resulting from vehicle-dependent recreational and other uses.

If the region experiences a population increase as a result of coal development north of the WSA, the benefits to livestock operations from closing the area to unauthorized vehicle use could be substantial.

B. No Action/No Wilderness (Proposed Action)

Under the No Action/No Wilderness Alternative, the entire 32,748 acres of public land within the Eagle Peak WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and fuelwood sales. Coal exploration and development could occur in the region.

1. Impacts to Wilderness Values

The wilderness values and special features of the Eagle Peak WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

Although the area would probably retain its wilderness values in the short-term, new rangeland developments, fuelwood sales, and unauthorized woodcutting could result in significant long-term degradation of the area's apparent naturalness and opportunities for solitude.

2. Impacts to Uranium Resources

There would be no impacts to uranium resources under this alternative. Mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 Code of Federal Regulations 3809).

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

APPENDIX 13

HORSE MOUNTAIN WSA (NM-020-043)

I. GENERAL DESCRIPTION

A. Location

The Horse Mountain Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 25 air miles southwest of Datil.

The U.S. Geologic Survey (USGS) topographic maps covering the WSA are the Wallace Mesa, Los Canyon, Horse Mountain West, and Horse Mountain East quadrangles. All of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

Horse Mountain is characterized by a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September as a result of brief, but often heavy thundershowers. Winter is usually the driest season. Annual precipitation averages about 14 inches over the entire WSA, with the lower elevations averaging 12 to 13 inches and higher elevations 16 inches. Average annual snowfall in the area is 2 to 3 feet in most localities.

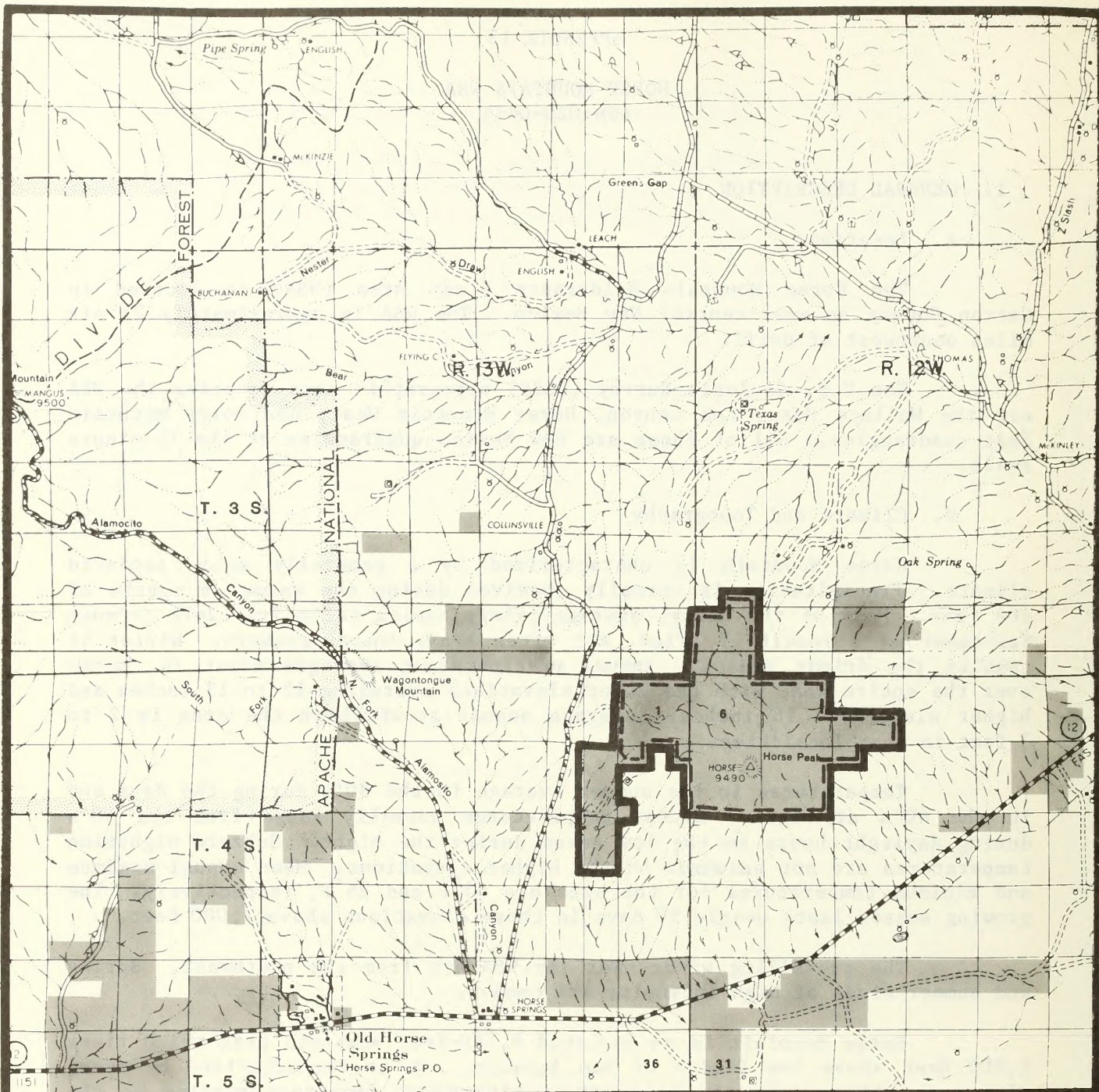
Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens during the night. Subzero nighttime temperatures are not uncommon in the higher elevations. Mean annual maximum and minimum temperatures for the area are 63°F and 26°F, respectively. The growing season lasts nearly 90 days in those elevations above 7,000 feet.

The prevailing winds over the WSA are from the southwest. Spring and summer winds of high intensity are common.

Horse Mountain is an isolated 9,490-foot mountain peak which rises 2,500 feet above the Plains of San Agustin. It is characterized by steep slopes on all aspects of the mountain with major drainages running to the northwest, north, and northeast.

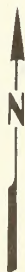
C. Land Status

The WSA contains 5,032 acres of public land. There are no State or private inholdings within the WSA boundary. (See Map 13-1 for land status within the WSA boundary.)



HORSE MOUNTAIN WSA (NM-020-043)

- WSA Boundary
- Amended Boundary (Proposed Action)
- BLM



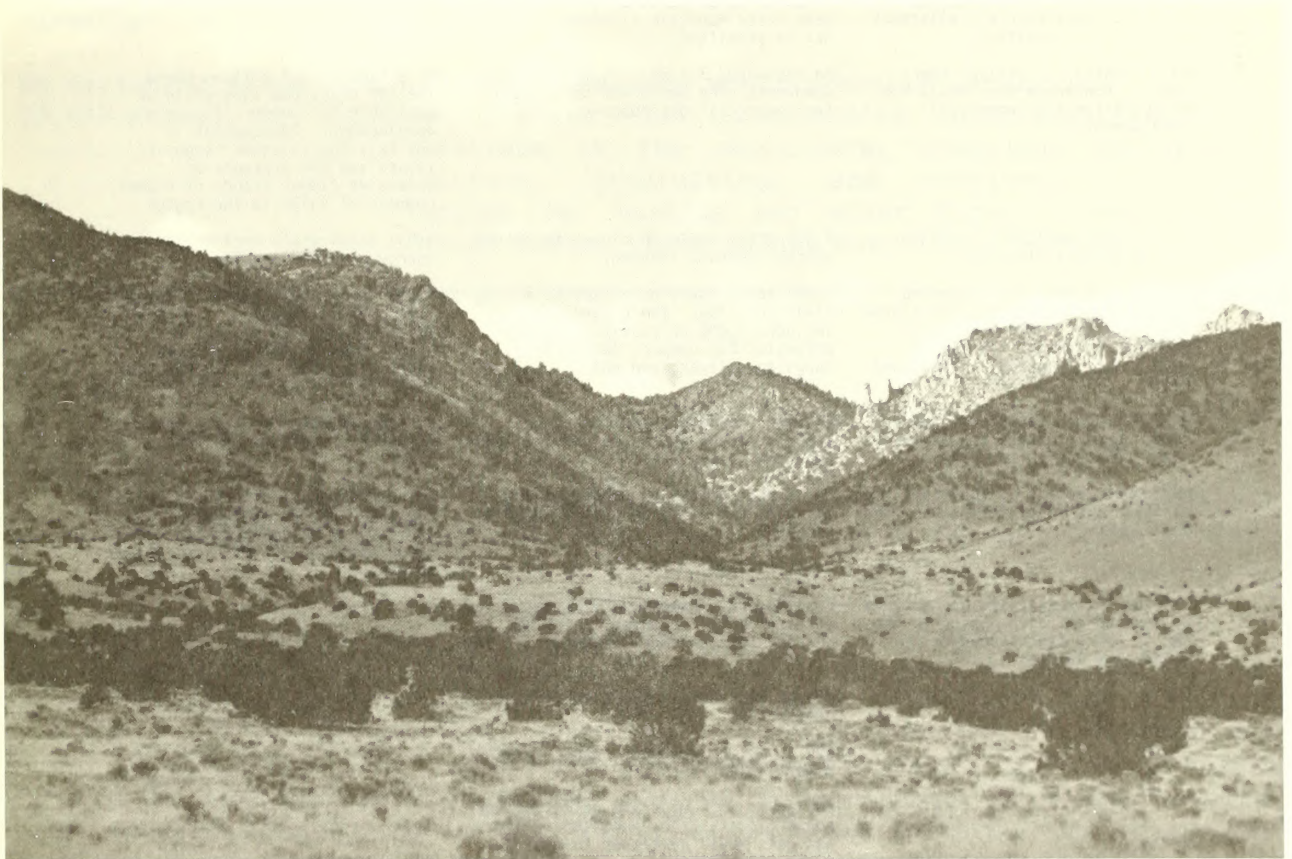
MAP 13-1
LAND STATUS

Scale: 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces
District, January 1985.

D. Access

Physical access to the Horse Mountain WSA is provided by unimproved two-track ways which originate along two County roads (B040 and B034) to the west and north of the WSA. State Highway 12 from Datil to Reserve is the major paved route in the area.



Horse Mountain from State Highway 12.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Action/No Wilderness
°Manage 5,032 acres as wilderness.	°Manage 4,432 acres as wilderness.	°Manage 5,032 acres without wilderness protection.
-Close 7 miles of vehicle trails.	-Close 6 1/4 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Access across public land to the West Horse Mountain ranch headquarters would be limited.		
-Require permits for vehicular access to maintain 1/2 mile of pipeline and 3 dirt tanks.	-Require permits for vehicular access to maintain 1/2 mile of pipeline and 3 dirt tanks.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-1 mile of pipeline, 2 troughs, and 1 1/2 miles of fence proposed for the West Horse Mountain allotment would not be permitted.	-1 mile of pipeline, 2 troughs, and 1 1/2 miles of fence proposed for the West Horse Mountain allotment would not be permitted.	-New rangeland developments could be permitted.
-An estimated 3.7 million board feet of ponderosa pine would not be available for commercial development.	-An estimated 3.7 million board feet of ponderosa pine would not be available for commercial development.	-An estimated 3.7 million board feet of ponderosa pine would be available for commercial development. Development is unlikely due to other resource values and the presence of extensive timber stands of higher commercial value in the region.
-5,032 acres would be closed to energy minerals leasing.	-4,432 acres would be closed to future energy minerals leasing.	-5,032 acres would remain open to energy minerals leasing.
-5,032 acres would be closed to mining claim location. The closed area includes 5,000 acres with moderate potential for copper, lead, zinc, tungsten, silver, and gold.	-4,432 acres would be closed to mining claim location. The closed area includes 4,000 acres with moderate potential for copper, lead, zinc, tungsten, silver, and gold.	-5,032 acres would remain closed to mining claim location. The closed area includes 5,000 acres with moderate potential for copper, lead, zinc, tungsten, silver, and gold.
-Attempts would be made to acquire 2,880 acres of State and private lands adjacent to the WSA.	-Attempts would be made to acquire 2,880 acres of State and private lands adjacent to the WSA.	-No special attempts would be made to acquire State and private lands.
-Helicopter access to construct and maintain two wildlife waters would be allowed.	-Helicopter access to construct and maintain two wildlife waters would be allowed.	-Projects proposed in the Horse Mountain Habitat Management Plan (HMP) could be implemented. There would be no restrictions on access.
-Fencing and prescribed burns could be carried out as proposed in the HMP if the projects enhance wilderness values.	-Fencing and prescribed burns could be carried out as proposed in the HMP if the projects enhance wilderness values.	
	°Manage 600 acres without wilderness protection.	
	-600 acres would remain open to energy minerals leasing.	
	-600 acres with moderate potential for copper, lead, zinc, tungsten, silver, and gold would be closed to mining claim location.	
	-3/4 mile of vehicle trails would remain open.	
	-Access across public land would be unrestricted to the West Horse Mountain ranch headquarters.	
	-Projects proposed in the Horse Mountain HMP could be implemented. There would be no restrictions on access.	

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (5,032 acres)	Wilderness protection would maintain the area's naturalness, outstanding opportunities for solitude, outstanding opportunities for hiking, camping, photography, and deer hunting, and special scenic and wildlife features.
Amended Boundary (Proposed Action) (4,432 acres recommended suitable, 600 acres recommended unsuitable)	Wilderness protection would maintain the high quality wilderness values of the portion of the WSA with the highest values and mitigate conflicts over access to the West Horse Mountain ranch headquarters.
No Action/No Wilderness (5,032 acres)	Although the area would probably retain its naturalness and outstanding opportunities for solitude in the short-term, rangeland management actions, woodcutting, and continued vehicular access for hunting and other forms of recreation could reduce these values over the long-term.

HORSE MOUNTAIN

II. EXISTING RESOURCES

A. Geology

The Horse Mountain WSA is located within the Datil-Mogollon Volcanic Plateau. This area is transitional between the Basin and Range physiographic province and the Colorado Plateau. The major geologic feature of the WSA is Horse Mountain, a composite strato-volcano of basaltic-andesitic composition. Horse Mountain is one of a series of Tertiary volcanic features which surround the southwestern portion of the Plains of San Agustin.

Rocks exposed within the WSA are volcanic and sedimentary in nature. Andesitic to basaltic flows of late Tertiary age have intruded and capped older rhyolitic tuffs and volcaniclastics of the mid-Tertiary Datil formation. Some Quaternary basin fill forms the surface of the southwestern "dog leg" of the WSA.

A small uplift of Triassic and Permian rocks occurs outside the WSA, 2 miles south of Horse Peak. These rocks suggest that Triassic and Permian sandstones and limestones extend beneath the volcanic pile forming Horse Mountain. Data from a deep well drilled near the center of the Plains of San Agustin indicate that the Mesozoic and Paleozoic rocks unconformably overlie Precambrian gneiss at depth.

B. Water

The WSA is located within the Plains of San Agustin, a closed basin, with interior surface water drainage.

No permanent streams or surface water bodies exist within the WSA boundary. The many alluvial arroyos and canyons which drain Horse Mountain contain runoff during the more intense storms but runoff soon disappears into alluvial fans and fill of surrounding lowlands.

Wells in the Horse Mountain area range in depth to water from 18 to 200 feet, but most are less than 100 feet to water. The general direction of ground water movement is southeast and southwest, but volcanic and structural features present make local interpretations of movement difficult. Most runoff is down mountain canyons until it reaches the fracture zones in igneous rocks of the Datil formation and the overlying Quaternary age alluvial deposits which are the principal aquifers in the WSA. Analysis results from a number of wells in the Horse Mountain area indicate water of suitable chemical quality for livestock purposes. Instantaneous flow rates for these wells range from 1 to 6 gallons per minute.

C. Soils

Soils in the WSA have textures that range from cobbly loams to clays and are shallow over basalt or tuff. Approximately 30 percent of the soil mapping unit is rock outcrop. The rock outcrop unit occurs on steep

woodland side slopes and ridges. It has potential erosion problems associated with slopes of 25 to 60 percent. This erosion potential is reduced somewhat by cobbles and stones on the surface.

D. Vegetation

1. General

The following Standard Habitat Sites (SHS's) are present within the Horse Mountain WSA:

Ponderosa-Pinyon Mountain (3,982 acres)

This SHS has mature ponderosa in the higher elevations with a mixture of pinyon on the drier slopes. The ponderosa stands are fairly extensive throughout the WSA, occurring generally in open semi-pure compositions. Some Douglas fir is mixed with the ponderosa, especially on the wetter north-facing slopes. The understory consists of mountain mahogany, oak, and rubber rabbitbrush. Animals that are commonly found in this SHS include mule deer, burros, gray foxes, golden eagles, turkey vultures, red-tailed hawks, and great horned owls. Other animals that are occasionally found include elk, black bears, mountain lions, bobcats, and bald eagles.

Blue Grama-Snakeweed Hill (1,050 acres)

Found primarily on lower hills next to mountains, the primary plant species within this SHS are broom snakeweed and blue grama, although fringed sage, winterfat, and squirreltail are also present. Common animal species in the SHS include coyotes, kit foxes, pronghorn, striped skunks, jackrabbits, prairie dogs, and desert cottontails.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of 13 species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Horse Mountain WSA supports approximately 299 wildlife species, including 53 reptile and amphibian species, 71 mammal species, and 175 resident and migratory bird species. A description of characteristic wildlife species present in the WSA is included in the SHS discussion in the Vegetation section.

HORSE MOUNTAIN

2. Threatened or Endangered Fauna Species

The Horse Mountain WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles and peregrine falcon, both Federally-endangered species.

F. Visual

Horse Mountain is characterized by abrupt elevation differences, dense and varied conifer forest vegetation, and a wide variety of shapes, colors, and textures, which are often spectacular in seasonal combination.

These scenic qualities, and Horse Mountain's proximity to State Highway 12 have resulted in a Visual Resource Management (VRM) Class II rating for the WSA.

In addition to the scenic qualities within the WSA, numerous vantage points up to 2,500 feet above the surrounding landscape offer sweeping vistas. Features over a hundred miles away can be seen on a clear day.

G. Cultural

There are no documented archaeological sites within the Horse Mountain WSA. Based on limited field surveys, the potential for the existence of sites is considered to be low.

H. Air

Generally, the quality of air within the Horse Mountain WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when southwest-prevailing winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resource potential of the land within the Horse Mountain WSA is shown on Map 13-2.

1. Energy Minerals

As of December 1, 1984, there were no mineral leases in the WSA.

a. Oil and Gas

No oil and gas exploration wells have been drilled within the WSA. The closest exploration well to the WSA is a 12,284-foot dry wildcat well, approximately 18 miles east of Horse Peak. This well, and outcrops at the southern base of Horse Mountain, suggest that a sequence of possible petroleum source and reservoir rocks, Cretaceous, Permian, and Mississippian in age, lie at depth below the volcanics comprising Horse Mountain. Within the region a few oil and gas wells have tested this sequence with negative results. With the local volcanic history and the poor results of oil and gas wildcats in the region, it is doubtful that economic oil and gas resources are present beneath the WSA. The potential for oil and gas is considered low.

b. Uranium

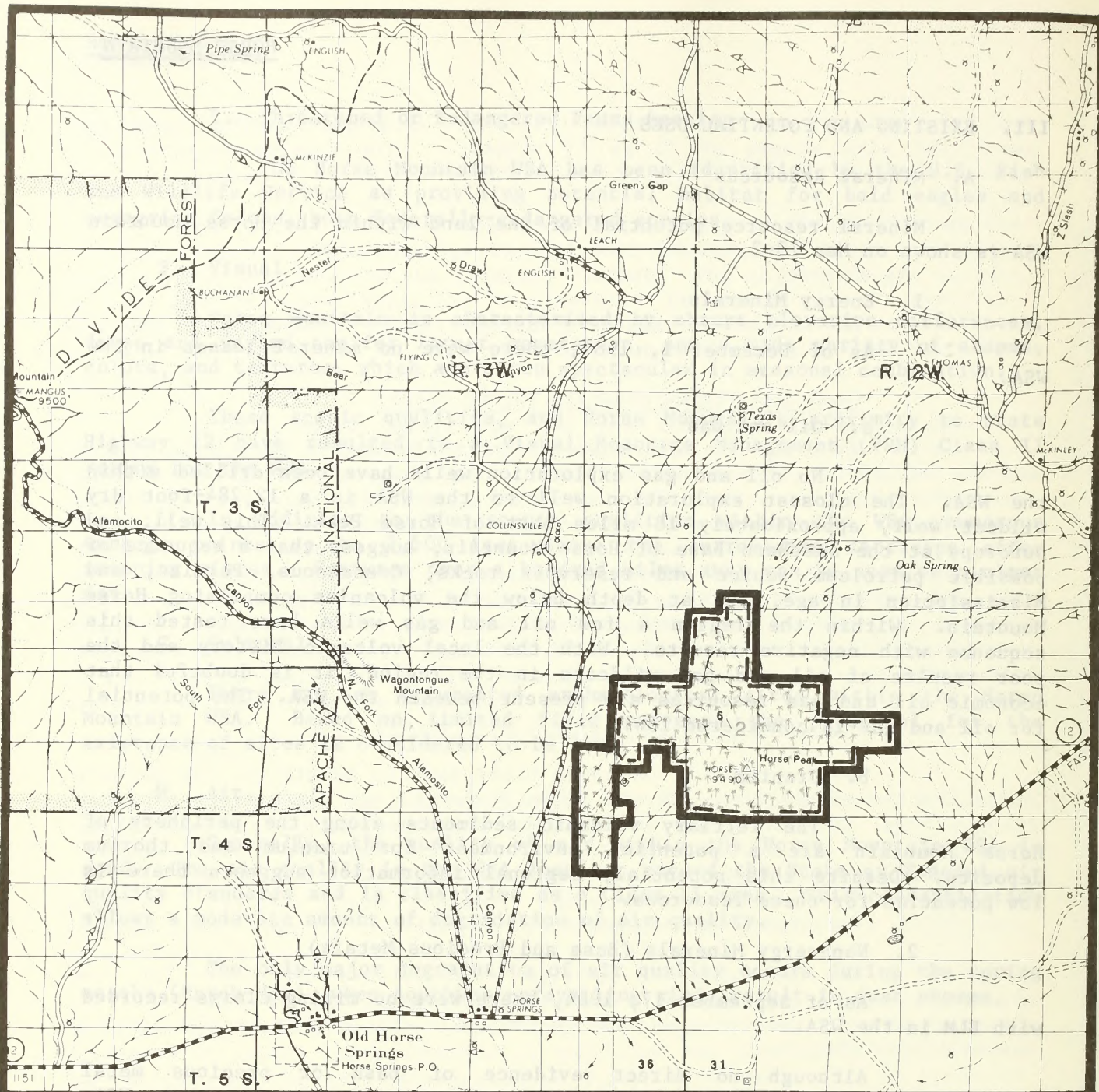
The Tertiary volcanic sediments along the periphery of Horse Mountain are a potential environment for uranium and thorium deposits. Despite this potential, regional information suggests there is low potential for these resources.

2. Nonenergy Minerals (Base and Precious Metals)

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

Although no direct evidence of base or precious metal mineralization has been identified within or near the Horse Mountain WSA, the geologic environment is moderately favorable for its existence. The rhyolite flow outcropping around the periphery of Horse Mountain is a portion of the Datil formation which hosts tin mineralization 35 miles south of the WSA. Outcrops of uplifted Permian limestones at the southern foot of Horse Mountain indicate that rhyolite may have interacted with limestone. Limestone/rhyolite interactions are classic geologic environments associated with base and precious metal deposition. Thus, the geologic environment is favorable for base and precious metal mineralization and the potential is considered moderate.

There has been very little recorded exploration for locatable minerals in the vicinity of the WSA. The WSA has been segregated from the general mining laws since 1970.



HORSE MOUNTAIN WSA (NM-020-043)

- WSA Boundary
- Amended Boundary (Proposed Action)
- BLM

Scale: 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces District, January 1985.

MAP 13-2 MINERAL RESOURCE POTENTIAL*

Base and Precious Metals

*Areas of moderate (2) mineral potential are shown for lands within the WSA. the potential may extend outside the WSA boundary. Areas of low potential are not shown.

If economic conditions encourage the development of more domestic sources of base metals, areas such as Horse Mountain could become targets for deep exploration. Even if geochemical anomalies are not surficially present, the shallow limestones at the base of Horse Mountain would be likely targets for the search of mineralized rhyolite/limestone interactions.

MINERAL RESOURCES POTENTIAL OF THE HORSE MOUNTAIN WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*	Approximate Acreage in Amended Boundary*
Energy Minerals				
Oil and Gas	Mesozoic and Paleozoic continental and marine sedimentary rocks	Low	--	--
Uranium	Tertiary volcanic sediments	Low	--	--
Nonenergy Minerals				
Base and Precious Metals (Copper ^a , Lead ^a , Zinc ^a , Tungsten ^a , Silver ^a , Gold)	Early Tertiary igneous intrusions into Paleozoic sedimentary and Precambrian basement rocks	Moderate	5,000	4,400

Note: *Acreage was not calculated for areas with low potential.

^a/Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

B. Watershed

Horse Mountain is within the Horse Springs watershed. No areas in the WSA have been classified as having critical erosion problems. There have been no projects for land treatments or erosion control in the WSA. Runoff in the WSA averages 0.5 to 1 inch per year with erosion amounts of 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are within the Horse Mountain WSA. The West, East, and North Horse Mountain allotments utilize a year-round cow-calf operation.

HORSE MOUNTAIN

Much of the WSA is rarely grazed by livestock due primarily to the lack of permanent water and inaccessibility of the area to livestock. The lower elevations of the WSA on the West Horse Mountain allotment are grazed year-round by livestock. Any livestock grazing that takes place in the higher elevations of the WSA usually occurs during the frost-free period or when snow is not present.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
West Horse Mountain	3,959	672	2,959	75%
East Horse Mountain	2,548	240	1,993	78%
North Horse Mountain	720	72	80	11%
TOTAL			5,032	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage conditions, livestock water availability, placement of salt and protein supplements, and performing normal maintenance on boundary fences.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
West Horse Mountain	3 miles boundary fence 3 dirt tanks
East Horse Mountain	$\frac{1}{2}$ mile pipeline 1 windmill (no longer functional) $1\frac{1}{2}$ miles boundary fence
North Horse Mountain	$\frac{1}{4}$ mile boundary fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

A spring has been proposed for development on the East Horse Mountain allotment. This development would replace the windmill which is no longer functional.

One mile of pipeline with two drinking troughs and $1\frac{1}{2}$ miles of fence have been proposed in the Allotment Management Plan for the West Horse Mountain allotment. This development is designed to improve distribution of

cattle by adding two pastures which will reduce grazing pressure in pastures in poor condition outside the WSA.

D. Timber Harvest

There is currently no authorized use of the woodland resources on Horse Mountain.

There are roughly 2,462 acres of ponderosa pine stands in the WSA. Assuming an average of 1,518 board feet per acre, there is a total of 3.7 million board feet standing timber in the area. Stocking of ponderosa pine in the Horse Mountain WSA is the highest in the Las Cruces District, but still is low for the potential of the site.

The pinyon-juniper stands are of low volume per acre making them marginally useful as sources of firewood, posts, Christmas trees, and other woodland products.

Past use of the area has consisted of two timber sales and a small amount of fuelwood harvesting (5 permits for 30 cords of dead and down pinyon-juniper). The timber sales, which ended in 1960, covered 275 acres and removed approximately 200,000 board feet of timber.

Future commercial use of the forested lands on Horse Mountain would require intensive timber management including selective cutting to take out the mature decadent trees. Sanitation harvesting and other silvicultural prescriptions, primarily controlled and natural fires, would be important applications to the ponderosa stands to promote regeneration opportunities if the commercial potential of the stands is to be maintained or improved, and utilized.

The present stand conditions represent a declining trend in the succession of a ponderosa pine forest. If no management is applied to these stands, most of the ponderosa stands in the WSA would be eliminated over the next 200 years as a result of past harvesting methods, a general lack of reproduction, grazing pressure, lack of wildfires, low stand vigor, and an ever-increasing encroachment of the pinyon-juniper.

E. Recreation

Horse Mountain is an isolated mountain peak and the view from the summit offers a spectacular 360° panorama. There are also isolated outcrops of volcanic rock which provide localized areas of geologic interest. Opportunities for recreation consist of deer hunting, various kinds of sightseeing, photography, hiking, camping, and off-road vehicle use.

The WSA has been withdrawn from appropriation under the general mining laws since 1970. This classification was designed to protect high recreational values in the WSA.

Current hunting use is limited primarily to big game based on the moderate deer population. Bear and mountain lion are also present in the

HORSE MOUNTAIN

WSA and are occasionally hunted. Other recreational uses in the area are presently limited by the low levels of public knowledge of the area, the distance from population centers, and the lack of legal access.

F. Education/Research

The WSA is not currently being used for any research or education projects. The isolated mountain does create an "island ecosystem" with diverse wildlife habitat and population characteristics, which could be the subject of research.

These same characteristics also result in opportunities for environmental education. However, the distance from population centers reduces the potential for actual use of the area for environmental education.

G. Native American

There are no known current or potential Native American religious sites within the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been issued nor are any pending in the WSA.

The lands within the WSA have been segregated since 1970 from appropriation under the general mining laws (NM 9688 Group II, published in Vol. 35, No. 154, of the Federal Register on August 8, 1970). This classification precludes the filing of mining claims, but does not affect mineral leasing.

I. Wildlife

A wildlife habitat management plan (HMP) has been developed for Horse Mountain in cooperation with the New Mexico Department of Game and Fish (NMDGF). It is designed to improve and protect habitat for bald eagles, mule deer, pronghorn, elk, Merriam's turkey, tassel-eared squirrels, harlequin quail, and cavity nesting birds. The objectives of the plan are to create more roosts, water sources, and prey species for bald eagles and to produce more forage for elk, mule deer, and pronghorn. Actions proposed in the plan include prescribed burning (interseeding with 40 percent grass, 30 percent forbs, and 30 percent browse), construction of two wildlife waters, and fencing off some reservoirs. When implemented, these actions will increase the potential of the area as wildlife habitat.

The area has not been identified by the NMDGF for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Horse Mountain WSA contains relatively little evidence of human use. The human impacts which exist in the WSA consist of rangeland developments (3 dirt tanks, 1 nonfunctional windmill, $\frac{1}{2}$ mile of pipeline, $4\frac{3}{4}$ miles of fence), 7 miles of vehicle routes, and the evidence of past logging operations which cover about 275 acres. The old logging access routes, which are the most noticeable of these impacts, would generally return to a natural condition under wilderness management. Because of good logging practices and the 20 years that have elapsed since operations ceased, the past logging does not significantly reduce the apparent naturalness of the WSA.

Approximately 600 acres in the southwestern portion of the WSA are open grassland. This area is adjacent to a County road, fence line, and ranch house, and is crossed by an access route to the West Horse Mountain ranch headquarters. These impacts are not well screened by topography or vegetation and are considered to reduce the apparent naturalness of this portion of the WSA.

The forested, mountainous portion of the WSA has been only lightly grazed and the few human impacts present are well screened by topography and vegetation. These combined factors produce a high degree of naturalness in this portion of the WSA.

b. Solitude

Horse Mountain rises over 2,500 feet above the Plains of San Agustin. This elevation difference enhances the feeling of remoteness from the few human activities outside the WSA which are visible from the mountain.

The only significant impact on solitude from activities occurring outside the WSA results from military training flights over the WSA. These low altitude overflights are intermittent and the impacts are of short duration.

In the WSA itself, the rugged topography with its forested ridges and valleys provides outstanding opportunities for solitude which might not otherwise be so abundant in a WSA of this size.

c. Primitive and Unconfined Recreation

The rugged mountain environment, with its ponderosa pine forest and numerous small meadows, provides an outstanding setting for hiking, camping, photography and other forms of backcountry recreation.

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Deer hunting accounts for most of the current recreational use in the WSA with other uses limited by the lack of legal access, distance from population centers, and limited public knowledge of the area. Horse Mountain also provides opportunities for zoological sightseeing of such wildlife species as large raptors, deer, black bear, and mountain lion.

The scenic vistas, forested mountain environment, and interesting geologic features on Horse Mountain result in outstanding hiking and camping opportunities. These opportunities are limited only by the lack of recreational water sources.

2. Special Features

Wildlife and scenic values are significant special features of Horse Mountain. Wildlife values include habitat for large raptors such as golden eagles, wintering bald eagles, prairie falcons, and possibly peregrine falcons. The forested mountain environment also supports deer, elk, mountain lion, black bear, and javelina.

Scenic values are derived from the more than 2,500-foot difference in elevation between the summit of Horse Mountain and the surrounding Plains of San Agustin. This results in vistas which can extend for over 100 miles on a clear day. Scenic values are also enhanced by the mixed ponderosa and oak stands and interesting geological features found on the mountain.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Horse Mountain WSA as being within the Upper Gila Mountains Forest Province. The potential natural vegetation is 2,462 acres of ponderosa pine/Douglas fir forest, 1,970 acres of pinyon-juniper woodland, and 600 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time of Albuquerque and Las Cruces, New Mexico and 6 hours driving time from El Paso, Texas.

B. Manageability

The Horse Mountain WSA could be managed to preserve the wilderness values which presently exist. Manageability is a judgment made by the BLM

after considering such factors as: private and State inholdings, valid existing rights, topography, and the overall land ownership pattern.

The "topographic island" character of Horse Mountain enhances wilderness management. The absence of private or State inholdings and private mineral rights within the WSA adds to the BLM's ability to manage the area as wilderness. The WSA has been segregated from appropriation under the mining laws since 1970, and there are no mining claims to complicate wilderness management.

Grandfathered livestock operations in the WSA are compatible with wilderness management. Required access for ranch operations would not create problems for wilderness management.

The isolated mountain character of Horse Mountain results in a WSA with good physiographic integrity. This configuration would be enhanced by a boundary adjustment which would place the boundary along an existing vehicle route at the base of the mountain. This would eliminate approximately 600 acres of open rangeland from the southwestern portion of the WSA. This area is impacted by an access route to a ranch house and a pipeline and is adjacent to a fence line, County road, and ranch house. These impacts significantly reduce the naturalness of this portion of the WSA. While this boundary adjustment would result in a WSA under 5,000 acres, it would improve the naturalness of the WSA as well as provide a more definable boundary. The remaining 4,432 acres could be managed to preserve the quality of the wilderness characteristics.

Manageability of the WSA would also be enhanced by the future acquisition, through voluntary exchange, of portions of Horse Mountain which are outside the WSA boundaries. This would include up to 2,880 acres of State land adjacent to the WSA boundaries and would result in virtually the entire mountain being managed as wilderness. These lands are legally described below.

Lands Recommended for Acquisition

<u>Legal Description</u>	<u>Acres</u>
State Land	
T. 3 S., R. 12 W., Section 32, All	640
T. 3 S., R. 13 W., Section 35, W $\frac{1}{2}$	320
Section 36, All	640
T. 4 S., R. 12 W., Section 17, N $\frac{1}{2}$	320
Section 18, N $\frac{1}{2}$	320
TOTAL	2,240
Private Land	
T. 3 S., R. 12 W., Section 33, S $\frac{1}{2}$	320
T. 4 S., R. 12 W., Section 4, N $\frac{1}{2}$	320
TOTAL	640

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V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

This report was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

Opposition to wilderness designation of Horse Mountain during the inventory phase came from livestock interest groups and many citizens of Catron County. Reasons for this opposition included: "The area doesn't appear natural due to the presence of rangeland developments and past logging;" "any additional wilderness in Catron County will impede economic progress in this underdeveloped area;" and "the small size of the Unit reduces its value as wilderness."

Support for wilderness designation came from recreational users and those interested in preserving the natural values of the area. Reasons cited included: the biological diversity present in this "island" ecosystem, the outstanding scenic and recreational qualities, and the lack of resource conflicts or values forgone by wilderness designation.

Nineteen letters were received on the draft version of this report. One respondent was opposed to designation of the WSA because it appears to have a favorable geologic environment for base and precious metals and is prospectively valuable for oil and gas.

Eighteen comments supported wilderness designation for the Horse Mountain WSA. Factors such as the WSA's scenic values, wildlife habitat, biological interest, geologic features, and manageability as wilderness were cited as enhancing the WSA's wilderness values.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to energy minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, education/research, Native American uses, and timber harvest are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
Amended Boundary (Proposed Action)	Improves naturalness and reduces conflicts.
No Action/ No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for the Horse Mountain WSA are the quality of the area's wilderness values and mineral potential. Although no significant impacts to nonenergy locatable minerals were identified, these resources are analyzed because the Horse Mountain WSA has moderate potential for copper, lead, zinc, tungsten, silver, and gold and mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 5,032 acres of public land in the Horse Mountain WSA would be recommended suitable for wilderness designation. (See Map 13-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and wilderness management of the area would maintain naturalness, outstanding opportunities for solitude, outstanding opportunities for hiking, camping, photography, and deer hunting, and special scenic and wildlife features in the long-term.

2. Impacts to Nonenergy Locatable Minerals (Copper, Lead, Zinc, Tungsten, Silver, and Gold)

It is assumed that after wilderness designation, the area would be closed to mineral entry and the location of new mining claims would not be allowed. The Horse Mountain WSA is, at the present time, segregated from mineral entry and there are no existing mining claims. Under the All Wilderness Alternative, there would be no new impacts on locatable mineral resources. The opportunity to explore an area of 5,000 acres with moderate potential for copper, lead, zinc, tungsten, silver, and gold would be forgone.

3. Impacts to Livestock Grazing

The WSA currently supports 672 animal unit months (AUMs); these grazing levels would not be impacted by wilderness designation. Grazing is a permissible and compatible activity in wilderness. Permits would be required for mechanized access for necessary maintenance of $\frac{1}{2}$ mile of pipeline and 3 dirt tanks.

The proposed $1\frac{1}{4}$ miles of fence, 1 mile of pipeline, and 2 troughs on the West Horse Mountain allotment would not be constructed because of the cumulative impacts on natural values in the area and because the developments are not intended to enhance the rangeland resources within the WSA. This would affect efforts to reduce grazing pressure on lands outside the WSA.

Much of this WSA is presently worked by horseback because of the relatively small size and the rugged terrain of the area. For this reason, restrictions on casual vehicular access would not create serious impacts to livestock operations.

Vehicular access to the West Horse Mountain ranch headquarters across the "dog leg" on existing routes would be denied.

B. Amended Boundary (Proposed Action)

Under the Amended Boundary Alternative, 4,432 acres of public land within the Horse Mountain WSA would be recommended suitable for wilderness designation (see Map 13-1 for amended WSA boundary). This amended boundary would exclude a "dog leg" of 600 acres of public land from the southwest boundary of the WSA. The new boundary would be along a vehicle route at the base of the mountain. The 600 acres excluded under this alternative are impacted by access routes and a fence.

1. Impacts to Wilderness Values

Wilderness designation of the 4,432 acres within the amended boundary would preserve the area's naturalness and outstanding opportunities for solitude and primitive recreation. These lands have a mountainous forested character and are of sufficient size to make practicable their preservation and use in an unimpaired condition. In addition to these mandatory wilderness characteristics, the area contains diverse wildlife habitat and species, and high scenic qualities. The impacts to these wilderness values would be the same as those discussed under the All Wilderness Alternative.

2. Impacts to Nonenergy Locatable Minerals (Copper, Lead, Zinc, Tungsten, Silver, and Gold)

The impacts on nonenergy locatable minerals would be the same as those described under the All Wilderness Alternative.

3. Impacts to Livestock Grazing

This boundary adjustment would eliminate restrictions on vehicular access to the West Horse Mountain allotment and would eliminate 600 acres of the 7,599-acre operation from wilderness management. Impacts to the West Horse Mountain ranch operations would be reduced by allowing vehicular access to the headquarters and eliminating approximately 1 mile of fence and 120 AUMs (10 cattle year long) from the amended boundary.

The impacts to livestock operations inside the amended boundary would be the same as those described under the All Wilderness Alternative.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 5,032 acres of public land in the Horse Mountain WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in

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Chapter III. The most probable uses of the area would be to provide for livestock grazing, wildlife habitat management, and recreation. Horse Mountain would remain under administrative segregation from the mining laws.

1. Impacts to Wilderness Values

The wilderness values and special features of the Horse Mountain WSA would not be provided with long-term Congressional protection. Since existing and proposed plans do not identify activities which would impair wilderness values, Horse Mountain could probably retain its wilderness values in the short-term. However, in the long-term, the cumulative effect of range, wildlife, and forestry projects and continued vehicular use could reduce the area's apparent naturalness and opportunities for solitude.

2. Impacts to Nonenergy Locatable Minerals (Copper, Lead, Zinc, Tungsten, Silver, and Gold)

The impacts on nonenergy locatable minerals would be the same as those described under the All Wilderness Alternative.

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

APPENDIX 14

JORNADA DEL MUERTO WSA (NM-020-055)

I. GENERAL DESCRIPTION

A. Location

The Jornada del Muerto (Journey of Death) Wilderness Study Area (WSA) is located in Socorro and Sierra Counties in south-central New Mexico. The WSA is situated 45 air miles south-southeast of the community of Socorro.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Val Verde and Malpais Well, New Mexico quadrangles at the 15-minute scale.

B. Climate and Topography

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 95° to 105°F. Winter temperatures are generally mild during daylight hours (45° to 60°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 50 mph.

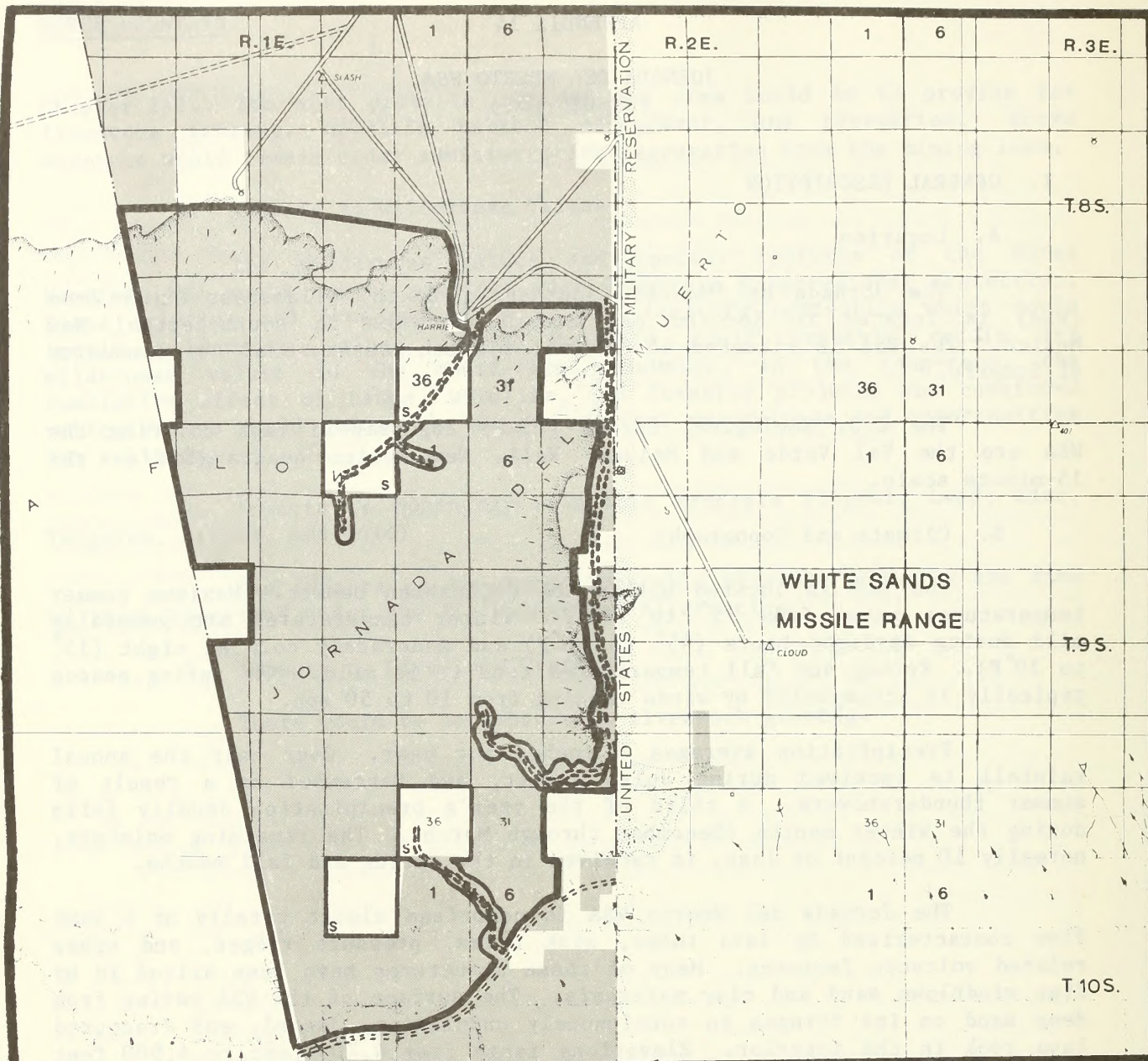
Precipitation averages 8 inches per year. Over half the annual rainfall is received during July, August, and September as a result of summer thundershowers. A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The Jornada del Muerto WSA is comprised almost totally of a lava flow characterized by lava tubes, sink holes, pressure ridges, and other related volcanic features. Many of these structures have been silted in by fine windblown sand and clay materials. The surface of the WSA varies from deep sand on its fringes to continuously undulating, jagged, and fractured lava rock in the interior. Elevations range from 4,700 feet to 4,900 feet with a maximum relief of only 200 feet.

C. Land Status

The WSA contains 31,147 acres of public land. There are 1,280 acres of State inholdings within the WSA boundary. Approximately 1,920 acres of State land have been cherry-stemmed out of the WSA. (See Map 14-1 for land status within the WSA boundary.)

The Jornada del Muerto WSA is located entirely within the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone established by a Memorandum of Understanding (MOU) between the United States Army and the BLM in 1973.



JORNADA DEL MUERTO WSA (NM-020-055)

Proposed Action--All Wilderness Alternative

— WSA Boundary

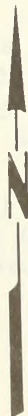
■ BLM

□ State

State ownership is identified only inside the WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985



MAP 14-1
LAND STATUS

D. Access

Primary legal access to the WSA is provided by U.S. Highway 380 on the north, then south on County Roads 2268 and 2322.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness (Proposed Action)	No Action/No Wilderness
°Manage 31,147 acres as wilderness.	°Manage 31,147 acres without wilderness protection.
-Access to rangeland developments along cherry-stemmed vehicle trails would be limited to the permittee.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-31,147 acres would be closed to oil and gas leasing and mining claim location.	-31,147 acres would remain open to oil and gas leasing and mining claim location.
-Reasonable access would be granted to WSMR personnel to recover unmanned drones or missile debris which might impact in the area.	-Access would be granted to WSMR personnel to recover unmanned drones or missile debris which might impact in the area.
-A visitor permit system would be implemented.	
-Attempts would be made to acquire 4,420 acres of State land within the WSA.	-No special attempts would be made to acquire State land inside the WSA.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues	
	Oil and Gas Exploration and Development	Wilderness Values
All Wilderness (31,147 acres) (Proposed Action)	Opportunity to explore an area of 31,100 acres with moderate potential for oil and gas would be forgone.	Wilderness protection would maintain the area's existing natural appearance, outstanding opportunities for solitude and primitive recreation, and special features of melanistic wildlife species.
No Action/No Wilderness (31,147 acres)	No impacts.	Although no actions are proposed in existing BLM plans which would directly affect the area's wilderness values, long-term nonwilderness management actions such as oil and gas exploration could degrade these values.



Jornada del Muerto WSA.

II. EXISTING RESOURCES

A. Geology

The geologic environment of the WSA is associated with the Jornada del Muerto syncline and the Tularosa Basin graben. Faulting and folding began in the early Tertiary period with major deformation occurring in middle Tertiary time. The WSA consists of the eastern half of the 0.76-million-year-old Jornada basalt flow. The flow is composed of permeable vesicular basalt less than 100 feet thick. The source of the flow, a crater 500 feet high and 1 mile in diameter, is located 1 mile west of the WSA, almost in the center of the lava flow. Geologic formations found in the WSA include Quaternary age basalt underlain by Quaternary age alluvium and the Tertiary age Santa Fe formation. Windblown sand, silt, and alluvium partially mantle the surface of the lava flow.

B. Water

The Jornada del Muerto WSA is located within the Jornada del Muerto Basin, a broad aggraded basin having poorly defined drainage except at central areas of subsidence. There are no permanent streams or surface water bodies within the WSA.

The ground water available in the WSA is found in formations under the Jornada basalt flow. The basalt is underlain by Quaternary age alluvium and riverine gravels up to 100 feet thick, which can yield small to large quantities of water. The alluvium overlies clay, silt, sand, and gravel of the Tertiary age Santa Fe formation which is known to yield small to moderate supplies of good quality water.

C. Soils

Approximately 95 percent of the surface area of the WSA is covered by a lava flow. Basalt rock outcrops cover 60 percent of the WSA. Soils within the interior of the flow are primarily composed of wind deposited sand and silt materials mixed with lava. Deep sandy soils with inclusions of deep loamy and shallow loamy soils over gypsum are found along the edge of the flow.

D. Vegetation

1. General

The vegetation of the WSA is typical of the Chihuahuan Desert. The area is comprised of the short grass vegetation type dominated by tobosa, black grama, and pappusgrass. Other common grass species include galleta, sand dropseed, fluffgrass, and various species of threeawns. Fourwing saltbush, creosote, Apacheplume, Mormon tea, soaptree yucca, broom snakeweed, cholla, prickly pear, and other cactus species are also commonly encountered.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of one Federally-listed endangered plant species. Additional information on this potentially occurring plant is available on request from the Socorro Resource Area Office.

E. Wildlife

1. General

One Standard Habitat Site (SHS) has been identified within the WSA. The habitat site is based on the combination of dominant vegetation and landform. The SHS supports 93 wildlife species, which include 24 mammal species, 31 reptile and amphibian species, and 38 resident and migratory bird species. A complete list of wildlife species found within the WSA is on file in the Socorro Resource Area Office.

Big game species indigenous to the WSA are pronghorn and mule deer. Pronghorn are relatively abundant in the WSA while mule deer densities are extremely low.

The most common predator is the coyote. Gray fox and badgers also inhabit the WSA. Common small mammals include desert cottontails, black-tailed jackrabbits, white-throated woodrats, and kangaroo rats.

The most common raptor species is Swainson's hawk. Golden eagles, red-tailed hawks, and marsh hawks are also frequently sighted.

A phenomenon peculiar to lava flows is that many animals living on them exhibit melanism, or protective dark coloration. A variety of melanistic species of lizards and melanistic western diamond-backed rattlesnakes have been found in the WSA.

2. Threatened or Endangered Fauna Species

One Federally-listed endangered animal species, the American peregrine falcon, may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. In addition, little potential habitat exists for supporting migrating individuals because the WSA lacks a sufficient prey base and available water.

F. Visual

The WSA is an expansive desertland environment characterized by little topographic relief but considerable landscape diversity. The WSA is a grassland lying in a rugged, broken lava flow in the center of a large desert bolson surrounded by distant mountain ranges.

G. Cultural

One cultural site has been recorded within the WSA which consists of a small lava shelter, rock room outlines, basalt cairns, and associated artifacts. Additional sites are certain to be present within the WSA, but predicting site density and significance is impossible without further inventory. A folsom projectile point, historic structures, and other artifacts have been located just outside the WSA. This suggests the cultural resources of the WSA could span 10,000 years of human occupation.

H. Air

Generally, the quality of the air within the Jornada del Muerto WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when prevailing winds result in dust storms.

JORNADA DEL MUERTO

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resources potential of the lands within the WSA is shown on Map 14-2.

MINERAL RESOURCES POTENTIAL OF THE JORNADA DEL MUERTO WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Mesozoic and Paleozoic continental and marine sedimentary rocks; axis of the Jornada del Muerto Basin	Moderate	31,100
Geothermal	Possible igneous plutons associated with the Rio Grande rift	Low	--

Note: *Acreage was not calculated for areas with low potential.

1. Energy Minerals

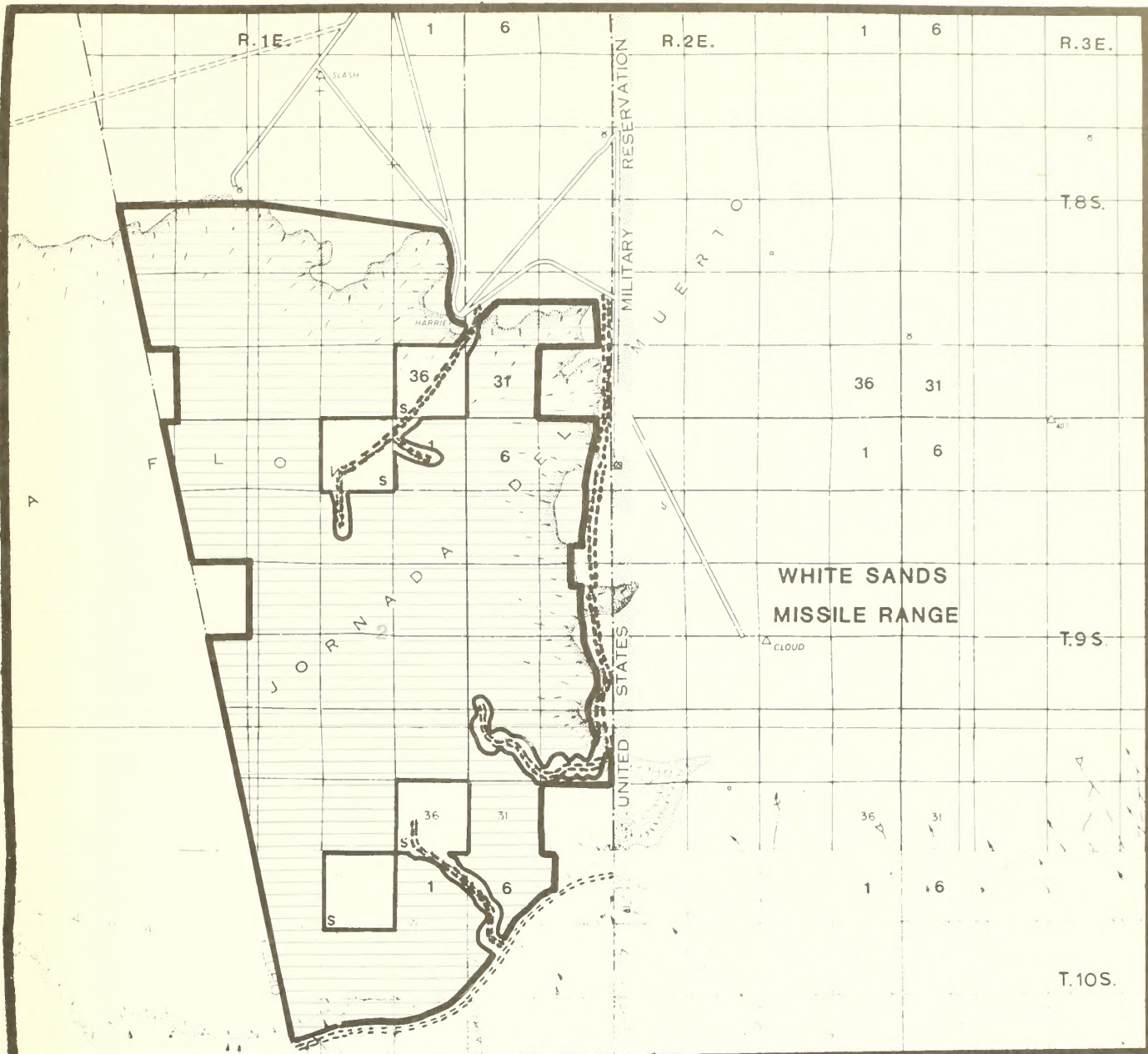
As of December 1, 1984, there were no mineral leases in the WSA.

a. Oil and Gas

There are no known occurrences of oil and gas within the Jornada del Muerto WSA, but the possibility exists that such reserves are present. The WSA is located in the northern half of the Jornada del Muerto basin which contains potential petroleum source and reservoir rocks. Oil and gas targets in the basin are Mesozoic and Paleozoic continental and marine sedimentary rocks. The geologic environment indicates possible petroleum accumulations beneath the surface of the WSA. The oil and gas potential is considered moderate.

b. Geothermal

Although the warm water pumped from Crater Well, 2 miles outside the WSA boundary, indicates abnormal heat flow in the area, the potential for undiscovered geothermal resources in the WSA is difficult to predict due to conflicting evidence. Generally, volcanic activity of the type associated with the Jornada Lava Flow does not produce commercially exploitable geothermal systems. Such lavas erupt from deep seated magma bodies along small, localized fissures and cool rapidly. For these reasons, the geothermal potential of the WSA is considered low.



JORNADA DEL MUERTO WSA (NM-020-055)

Proposed Action--All Wilderness Alternative

— WSA Boundary

□ BLM

□ State

State ownership is identified only inside the WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

MAP 14-2 MINERAL RESOURCE POTENTIAL*

□ Oil and Gas

*Areas of moderate (2) mineral potential are shown for lands within the WSA; the potential may extend outside the WSA boundary. Areas of low potential are not shown.

JORNADA DEL MUERTO

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA. The potential for nonenergy mineral resources in the WSA is considered low to nonexistent.

B. Watershed

The Jornada del Muerto WSA is located entirely within the Slash watershed. The WSA is in the slight erosion class and has a projected static erosion trend. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

Two grazing allotments lie partially within the Jornada del Muerto WSA. Both allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Approximate Acres in WSA	Percent Allotment
Buckhorn Ranch	40,848	5,485	14,956	37%
Malpais	37,368	5,427	16,191	43%
TOTAL			31,147	

Note: ^{a/}Information shown in table reflects only Federal acres and animal unit months (AUMs) on public land.

2. Ranch Management

Permittees periodically inspect and maintain the developments through the use of motorized vehicles. Fences are inspected about once a month on horseback or by vehicle.

Existing rangeland developments within the WSA boundary consist of 4½ miles of allotment boundary fence and 3½ miles of interior pasture fence. Approximately 2½ miles of buried plastic pipeline and 3 drinking troughs on the Malpais allotment and 1 windmill on the Lava Ranch allotment are cherry-stemmed out of the WSA. Cherry-stemmed rangeland developments on State inholdings include: 1 windmill on the Buckhorn Ranch and 1 windmill, an earthen stock tank, and approximately 2 miles of buried plastic pipeline with 2 drinking troughs on the Malpais allotment.

Boundary Fences Within WSA:

Buckhorn Ranch and Malpais	2 miles
Lava Ranch and Malpais	2½ miles

Boundary and Interior Pasture Fences Forming WSA Boundary:

Buckhorn Ranch	10 miles
Malpais	15 miles

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

Recreational use of the WSA is very low and limited to coyote calling, pronghorn hunting, and occasional sightseeing.

The expansive vistas of surrounding landscapes and the opportunities for solitude make the WSA potentially attractive for day uses such as short hikes, picnicking, and photography. Despite these potential uses, recreational opportunities within the WSA itself are considered by the BLM to be limited for most recreational users when compared to other lands in the region.

Public comments on the draft version of this report indicated disagreement with this assessment and revealed that there are individuals who find this rugged, expansive landscape challenging and attractive for recreational activities such as hiking, camping, and photography.

Despite this attractiveness for some people, recreational use is not expected to increase substantially in the future because of the lack of recreational water sources and the presence of lands with more diverse recreational opportunities closer to population centers in the region.

E. Education/Research

Environmental education opportunities may be available for the study of the natural history of desert-lava grassland.

F. Wildlife

No specific wildlife management actions are planned for the area at present.

G. Other--White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone

The WSA lies within the WSMR Aerobee 350 Safety Evacuation Zone and may be subject to occasional impacts from missile hardware or debris. The military periodically evacuates residents of the Zone to ensure their safety.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the heart of the WSA are minimal. Intrusions within the WSA boundary consist of 8 miles of grazing allotment boundary and interior pasture fences. Three windmills, an earthen stock tank, four and one-half miles of buried water pipeline, and five drinking troughs are located on State and Federal lands that have been cherry-stemmed out of the WSA. Overall, the naturalness values of the interior of the WSA are of high quality.

The boundaries of the WSA are impacted by 25 miles of fences and 2½ miles of buried pipeline with 3 drinking troughs. These developments are technically outside the WSA boundary. The concentration of rangeland developments along the WSA's periphery only slightly detracts from the generally high quality of the area's naturalness values.

b. Solitude

The Jornada del Muerto WSA offers outstanding opportunities for solitude. The WSA lies in one of the most remote, little visited regions of New Mexico. It is a vast, rugged lava landscape surrounded by grassland desert and distant mountain ranges.

c. Primitive and Unconfined Recreation

Outstanding opportunities for hiking, photography, and sightseeing are available in the Jornada lava flow. For the average individual, the WSA would likely prove unattractive for backcountry use. However, for those persons who appreciate expansive and isolated desert environments, the recreational values of this WSA would be considered high. The WSA is well suited to late fall and winter recreational use.

2. Special Features

A variety of lizards and western diamond-backed rattlesnakes found in the Jornada del Muerto WSA exhibit melanism or dark protective coloration; a phenomenon peculiar to lava flows.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Jornada del Muerto WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe. However, the WSA's Chihuahuan Desert associations are strongly influenced by the unique edaphic, hydrological, and structural characteristics of the lava flow. For example, soaptree yucca occur on the periphery of the WSA which approach 30 feet in height.

b. Distance From Population Centers

Two cities, Albuquerque and Las Cruces, New Mexico, identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs), are located within 3 hours driving time of the WSA. El Paso, Texas, is within 4 hours driving time of the WSA.

B. Manageability

The Jornada del Muerto WSA could be managed as wilderness. This judgment was made after considering such factors as valid existing rights, the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone, off-road vehicle use, and State inholdings.

Livestock management, including required access for maintenance of existing rangeland developments, is not expected to create problems for wilderness management. With the exception of fences that do not have existing vehicular access, all rangeland developments within the WSA are located along cherry-stemmed roads.

The WSA lies within the WSMR Aerobee 350 Safety Evacuation Zone that must be evacuated for the safety of area residents. The Safety Zone is necessary for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Zone to recover missile debris. However, these access needs are not expected to create serious wilderness management problems because only one missile impact is known to have occurred in the WSA in the past 24 years. The recovery of that debris did not significantly alter the natural values of the WSA.

The military's need to periodically evacuate the area for safety reasons will complicate wilderness management but will not render the area unmanageable as wilderness. To assist the military in their periodic evacuations of the area, a permit system could be a desirable feature of the wilderness management plan that will be developed if Congress designates the area. The permit system would allow BLM to control use of the area to a greater degree than it has in the past and reduce conflicts with the military's need to ensure safety in the area.

The wilderness management potential of the WSA in terms of effectively precluding vehicular access to the area is excellent. Off-road

vehicle use is limited by the rugged nature of the volcanic landscape. Although several jeep trails extend into the area, access to them could be effectively closed to use by the general public.

The acquisition of 1,220 acres of State inholdings, 1,920 acres of cherry-stemmed State land, and 1,280 acres of State land adjacent to the WSA through voluntary exchange would enhance manageability. The lands legally described below should be considered for acquisition if the area is designated wilderness.

Lands Recommended for Acquisition

<u>Legal Description</u>	<u>Acres</u>
State Land	
T. 8 S., R. 1 E., Section 32 (that portion east of the Pedro Armendariz Grant)	160
Section 36, All	640
T. 8 S., R. 2 E., Section 32, All	640
T. 9 S., R. 1 E., Section 2, All	640
Section 16 (that portion east of the Pedro Armendariz Grant)	420
Section 36, All	640
T. 9 S., R. 2 E., Section 32, All	640
T. 10 S., R. 1 E., Section 2, All	640
TOTAL	4,420

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has generally indicated support for designation of the Jornada del Muerto WSA as a wilderness area. Reasons cited have emphasized the WSA's outstanding solitude, natural, and recreation values.

Opposition has been expressed by area permittees who feel that wilderness designation would adversely impact their ranch operations.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Jornada del Muerto WSA as wilderness could potentially conflict with military operations within the Aerobee 350 Safety Evacuation Zone.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 27 letters were received. Five were opposed to wilderness designation while twenty-two favored wilderness designation for the Jornada del Muerto WSA.

These comments revealed substantial disagreement with the BLM's initial assessment of the WSA. The disagreements centered primarily around BLM's assessment of the manageability problems resulting from WSMR's needs and activities in the Aerobee 350 Safety Evacuation Zone. There were also differences of opinion regarding the attractiveness and recreational opportunities offered by the WSA.

Concern was expressed by WSMR and others that wilderness designation would increase the low levels of visitor use which presently occur in the area, thereby increasing safety and security problems in the Aerobee 350 Evacuation Zone.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to nonenergy minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, education/research, and WSMR Aerobee 350 Safety Evacuation Zone are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This alternative was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.
No Action/ No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis
The primary issues identified for this WSA are the quality of the area's wilderness values and oil and gas potential.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness (Proposed Action)

Under the All Wilderness Alternative, the entire 31,147 acres of public land within the Jornada del Muerto WSA would be recommended as suitable for wilderness designation. (See Map 14-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would impact wilderness values by providing the resources in the area with long-term Congressional protection. The area would be managed to retain its natural appearance, outstanding opportunities for solitude, hiking, photography, and sightseeing, and special features.

2. Impacts to Oil and Gas

Despite moderate oil and gas potential on 31,100 acres in the Jornada del Muerto WSA, there has been no exploration drilling within the area. It is assumed that no new leases would be let in the area after wilderness designation. If a discovery were made in an area adjacent to the WSA, oil and gas resources would be impacted because there would no longer be an opportunity to fully evaluate the oil and gas potential in the WSA. Under the All Wilderness Alternative, the opportunity to explore for and develop oil and gas resources would be forgone on 31,100 acres in the long-term.

3. Impacts to Livestock Grazing

It is difficult to assess how the restrictions of wilderness management would affect livestock grazing in the WSA because the type and location of future rangeland developments have not been identified at this time. However, given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are necessary to ranch operations.

It would be desirable to restrict use by the general public on three roads which are presently corridorred out of the WSA. One road could be restricted to authorized users in both of the allotments. Other vehicle routes necessary to maintain existing rangeland developments could remain open to use by area permittees.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 31,147 acres of public land within the Jornada del Muerto WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be development of rangeland resources, possible mineral exploration, and other traditional uses.

1. Impacts to Wilderness Values

The naturalness, outstanding opportunities for solitude and primitive recreation, and special features of the Jornada del Muerto WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change. Nonwilderness uses such as oil and gas exploration could degrade wilderness values in the long-term.

2. Impacts to Oil and Gas

Under this alternative, the entire area would remain open to oil and gas leasing. There would be no impacts to oil and gas resources.

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

MESITA BLANCA WSA
(NM-020-018)

I. GENERAL DESCRIPTION

A. Location

The Mesita Blanca Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 4 miles north of U.S. Highway 60 and 20 air miles west of Quemado.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Blaines Lake, Goat Springs, Salazar Canyon, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles are at the 7½-minute scale.

B. Climate and Topography

The WSA has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September primarily from brief, but often heavy, thundershowers. Winter is usually the driest season. Annual precipitation averages about 11 inches over the entire WSA.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Mesita Blanca WSA is a flat to rolling grassland broken by isolated sandstone and basalt mesas which are characterized by vertical cliffs and broken topography. The dominant topographic feature and highest point in the WSA is the Red Hill Cinder Cone and its associated 2,000-acre lava flow. Elevations in the WSA range from 6,400 feet to 7,679 feet, resulting in an elevation difference of 1,279 feet.

C. Land Status

The WSA contains 16,429 acres of public land and 160 acres of private inholdings. (See Map 15-1 for land status within the WSA boundary.)

D. Access

The Mesita Blanca WSA has good physical and legal access. County Road A007 forms a portion of the eastern boundary of the WSA with County Road A005 providing access to the western edge of the WSA. There are also

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

MAP 12-1 AND MAP 15-1

LAND STATUS

BLM

State


Private

— WSA Boundary

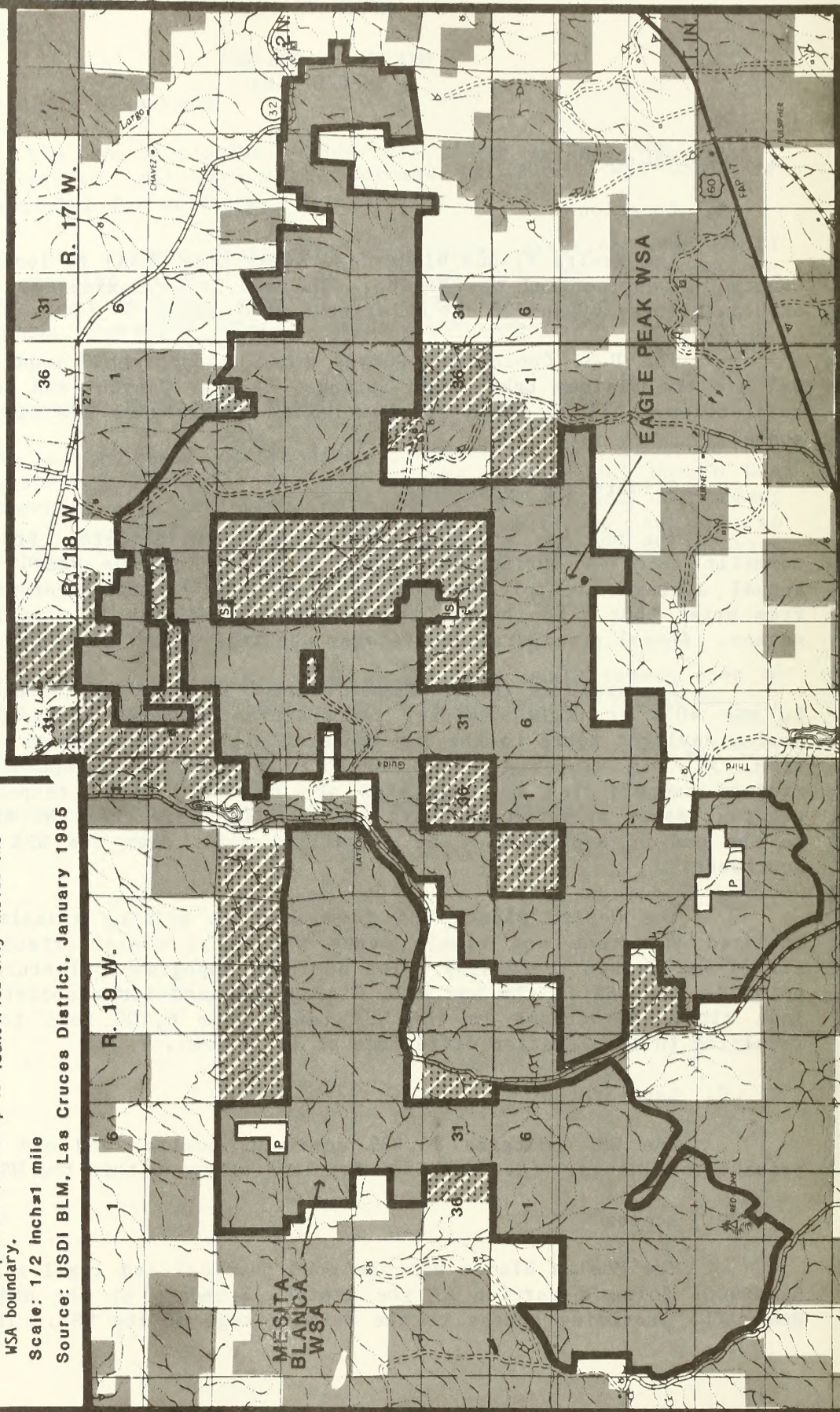
State and private ownership is identified only inside the WSA boundary.

Scale: 1 1/2 inch = 1 mile

Source: USDI BLM, Las Cruces District, January 1985

 BLM Surface/Non BLM Subsurface

Lands Removed from WSA Status after Reinventory



unimproved ranch access routes which provide east-west access through the southern and northern portions of the WSA.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 16,429 acres as wilderness.	°Manage 16,429 acres without wilderness protection.
-Attempts would be made to acquire 160 acres of private land within the WSA.	-No special attempts would be made to acquire private land within the WSA.
-Close 20 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to maintain 6 miles of pipeline, 4 drinking troughs, and 5 dirt tanks.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-Fuelwood cutting would not be permitted.	-Fuelwood sales could be permitted.
-16,429 acres would be closed to energy minerals leasing.	-16,429 acres would remain open to energy minerals leasing, mining claim location, and mineral material sales.
-16,429 acres would be closed to mining claim location. The closed area includes 16,400 acres with moderate potential for uranium.	
-16,400 acres would be closed to mineral material sales. The closed area includes 300 acres with high potential for cinders, 2,000 acres with moderate potential for cinders, and 800 acres with moderate potential for sand and gravel.	
-Management activities proposed in the Stokes Flat and Headquarters allotments' watershed plans would be restricted by the Wilderness Management Plan and subject to the BLM Director's approval.	-Management activities proposed in the Stokes Flat and Headquarters allotments' watershed plans could be implemented.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues
	Wilderness Values
All Wilderness (16,429 acres)	Wilderness protection would maintain naturalness, outstanding opportunities for solitude, and geological and cultural special features.
No Action/No Wilderness (16,429 acres) (Proposed Action)	The area would probably retain its natural values and outstanding opportunities for solitude in the short-term. Continued vehicular access, additional rangeland developments, fuelwood cutting inside the area, and possibly coal development in the region could reduce solitude and naturalness in the long-term.

II. EXISTING RESOURCES

A. Geology

The Mesita Blanca WSA lies within the southern portion of the Colorado Plateau. Gently southeastward-dipping sediments of Cretaceous age, primarily the Mesaverde group and Mancos shale, dominate the surface of the WSA. Natural erosion of the sediments has produced mesas of low relief throughout the area. Quaternary basalt flows and a few related cinder cones (the most prominent being the Red Hill Cinder Cone) cap portions of the southern extension of the WSA.

Exploration wells drilled within the region provide evidence that Precambrian granite, Permian sediments, and Triassic sediments are present beneath the surficial deposits.

In general, sedimentary rocks, which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then partially covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

The Mesita Blanca WSA is located in the Little Colorado River sub-basin. The principal stream system is Carrizo Creek, but neither it nor other minor drainages found in the Mesita Blanca WSA are perennial. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the main streams. Earthen type reservoirs, designed to catch and store runoff, normally contain water 6 months of the year. Quality data for the Little Colorado sub-basin are not available.

The source of all ground water in the Little Colorado sub-basin is precipitation. No ground water is known to enter the basin from outside areas. Most rock formations present will yield enough ground water locally to supply livestock needs. The alluvium of stream valleys and bolson fill are the most important ground water reservoirs in the WSA. There is a large volume of ground water available for development in the Little Colorado sub-basin, but is so distributed as to make recovery in large amounts uneconomical. In general, ground water from stream-valley alluvium and bolson deposits is of good quality and suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Ground water from intrusive and volcanic rocks is generally of good quality, but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, ground water is usually highly mineralized.

C. Soils

The soils in this WSA range from shallow to deep and were formed in a variety of parent materials. About one-third of the area has soils

MESITA BLANCA

that formed over sandstone and shale. These soils are gently sloping, but have potential water erosion hazards due to the silty textures.



View from Red Hill Cinder Cone.

Another one-third of the WSA is characterized by soils that are shallow to deep over basalt flows, basalt-capped mesas, and rolling basalt hills and ridges. About 30 percent of this area is basalt rock outcrop. These soils are clayey and have many rock fragments. The potential erosion hazard is generally low in this area, especially with the protective rock fragments on the surface. The only erosion problems would occur on the steep side slopes.

The rest of the WSA has deep gravelly soils on moderately sloping hills and fans, deep loamy soils in swales, and a small area of soils formed in waterlaid volcanic ash southwest of the Zuni Salt Lake crater. The water erosion hazard in these areas is slight to moderate.

D. Vegetation

1. General

In the Mesita Blanca WSA, the following Standard Habitat Sites (SHS's) are present:

Blue Grama-Snakeweed Hill (1,326 acres)

Found on rolling hills bordered by pinyon-juniper woodlands, this SHS includes blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Also present are fringed sage, winterfat, galleta, dropseed, wolftail, oak, Apacheplume, and scattered pinyon and juniper. The aspect is usually short and mid-grasses with scattered low shrubs. Animal species that are commonly found in this SHS include porcupines, striped skunks, mule deer, bobcats, coyotes, pronghorn, turkey vultures, and golden eagles.

Alkali Sacaton-Russian Thistle Valley (9,316 acres)

This SHS is found in large, flat bottomlands bordered by pinyon-juniper hills, with annual forbs and grasses also present. Principal plant species include alkali sacaton, western wheatgrass, vine-mesquite, blue grama, galleta, spike muhly, bottlebrush squirreltail, fourwing saltbush, rabbitbrush, winterfat, and annual and perennial forbs. The aspect is usually grassland with scattered shrubs. Animals commonly found in this SHS include pronghorn, kit foxes, coyotes, striped skunks, and turkey vultures.

Pinyon-Juniper Hill (5,787 acres)

This SHS is found primarily on low hills next to mountains. Principal plant species include pinyon-juniper, snakeweed, blue grama, fringed sage, winterfat, bottlebrush squirreltail, mountain mahogany, oak, rubber rabbitbrush, sideoats grama, New Mexico feathergrass, needle-and-thread, galleta, little bluestem, skunkbush sumac, and spineless horsebrush. North- and east-facing slopes usually have more pinyon, juniper, and shrubs, while south- and west-facing slopes contain more grasses and low-growing shrubs. Common animal species include coyotes, kit foxes, porcupines, striped skunks, mule deer, bobcats, turkey vultures, red-tailed hawks, and screech owls.

2. Threatened or Endangered Plant Species

No threatened or endangered plant species have been recorded from this WSA. The WSA does contain habitat which offers potential for the occurrence of eight threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Mesita Blanca WSA supports approximately 306 wildlife species. These include 57 reptile and amphibian species, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species occurring in the Mesita Blanca WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Fauna Species

The WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for the black-footed ferret, a Federal endangered species.

F. Visual

The scenic quality of the majority of the WSA has been rated as Visual Resource Management (VRM) Class III with some areas of Class IV scenery. The higher Class III visual values are derived from the scenic qualities of the Red Hill Cinder Cone and the vertical sandstone and basalt mesas found in the southern and central parts of the WSA. The rolling, grass-covered hills in the northern portion of the WSA were assigned Class IV because of their low scenic quality and lack of visual sensitivity.

G. Cultural

Portions of the Mesita Blanca WSA were the subject of a Class II Cultural Resource Survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 5,000 acres in the WSA, identified 53 sites which ranged from petroglyphs to rock shelters and villages. These sites represent human habitation from Archaic period to the homesteading era. Of the sites recorded by this survey, seven were considered worthy of nomination to the National Register of Historic Places.

H. Air

Generally, the quality of air within the Mesita Blanca WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

This situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resource potential of the lands within the WSA is shown on Map 15-2 and the location of lands under mineral leases is shown on Map 15-3.

1. Energy Minerals

a. Oil and Gas

As of December 1, 1984, there was one post-Federal Land Policy and Management Act (FLPMA) oil and gas lease in the WSA.

Although no drilling has occurred within the WSA, three dry wells have been drilled locally since 1950. Any positive shows of oil and gas in the region could stimulate exploration attempts within the WSA. The oil and gas potential is considered low.

b. Coal

Private and government exploration in areas 15 to 20 miles northeast of the WSA have identified economic coal reserves within the Mesaverde group. Although the Mesaverde group occurs shallowly in much of the WSA, recent information indicates that the potential for economic coal deposits is low because, if present, the coal would occur in thin beds or at depth.

c. Uranium

Within the region, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration adjacent to the WSA has identified subeconomic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate potential for economic uranium deposits.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

a. Cinders

A New Mexico State Highway Department cinder pit has previously been active at the southeastern base of Red Hill Cinder Cone, which lies just outside of the WSA. The prominent Red Hill Cinder Cone, which is within the boundary of the WSA, is composed of excellent cinders and has good access. This deposit would be an excellent source of cinders. The potential is considered high. There are other areas in the WSA that

EAGLE PEAK WSA (NM-020-019 MAP 12 AND MESITA BLANCA WSA (NM-020-018) MAP 15

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

- BLM
- State
- Private
- WSA Boundary

State and private ownership is identified only inside the WSA boundary.

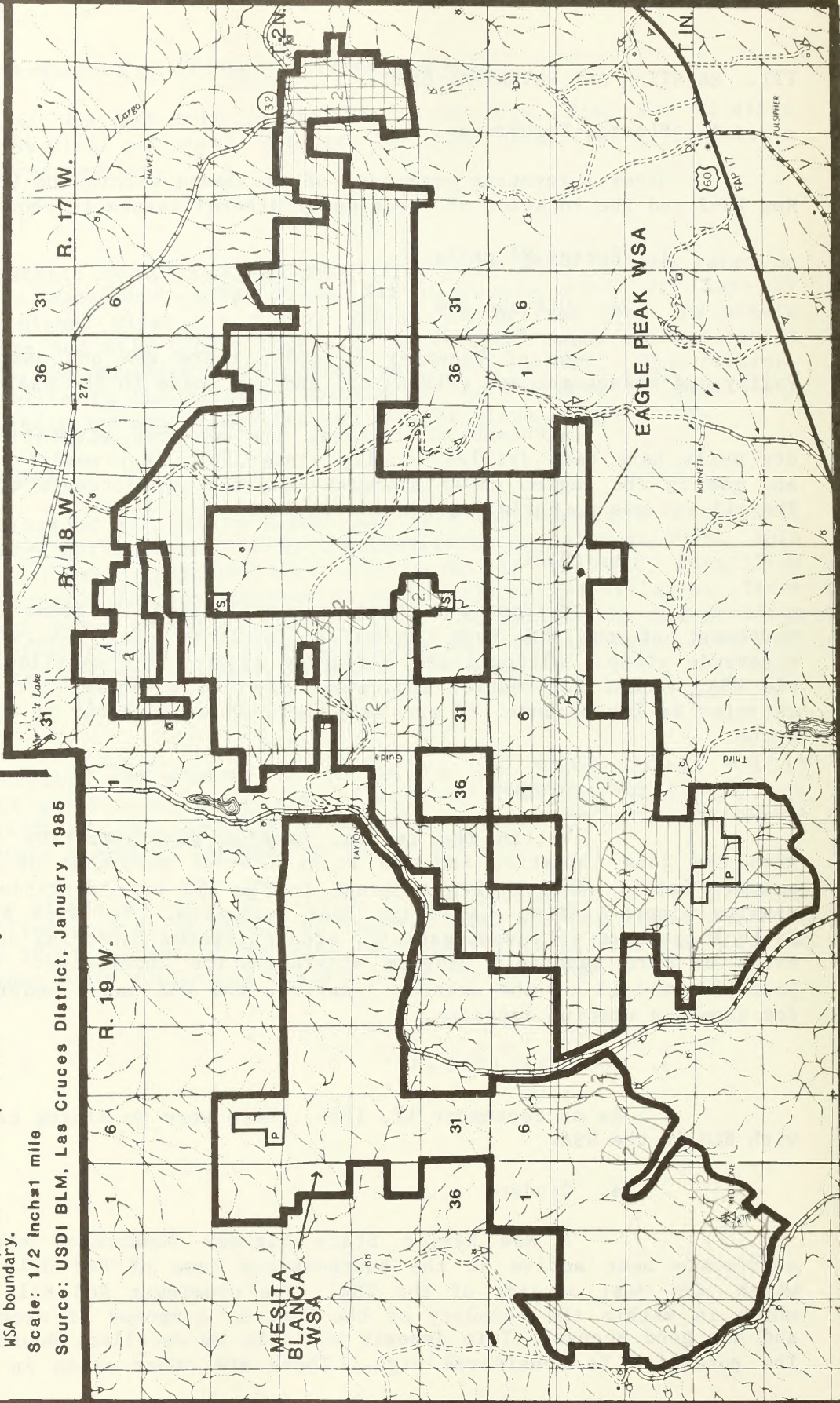
Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

MAP 12-2 AND MAP 15-2 MINERAL RESOURCE POTENTIAL*

*Areas of high (1) and moderate (2) mineral potential are shown for lands within the WSA; the potential may extend outside the WSA boundary. Areas of low potential are not shown.





- Sand and Gravel
- Uranium
- Cinders




EAGLE PEAK WSA (NM-020-019) MAP 12 AND MESITA BLANCA WSA (NM-020-018) MAP 15

Proposed Action--No Action/No Wilderness Alternative (Applies to Both WSAs)

MAP 12-3 AND MAP 15-3
MINING CLAIMS AND MINERAL LEASES*

-  BLM
-  State
-  Private
-  WSA Boundary

 Post-FLPMA Oil and Gas Leases

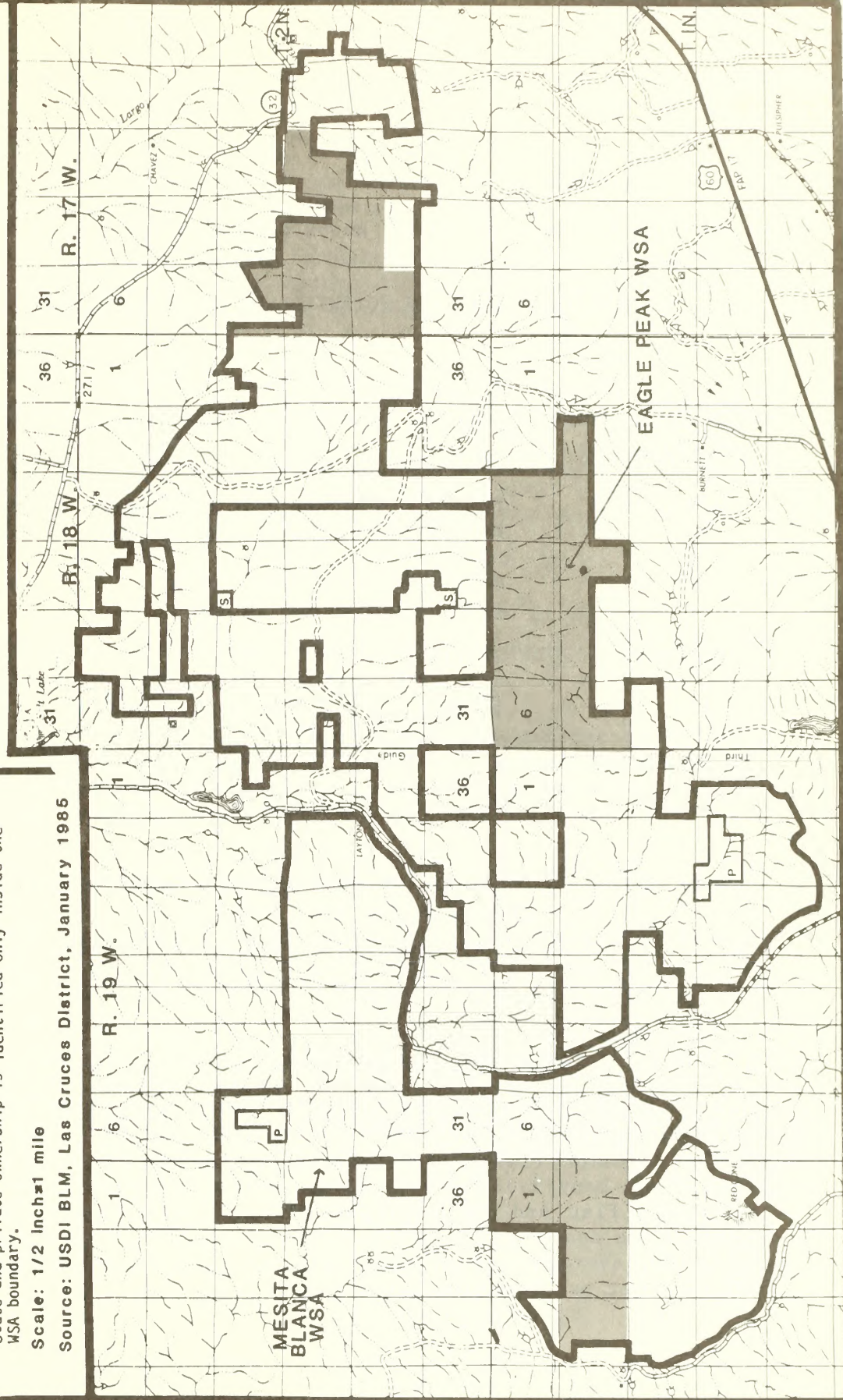
FLPMA was passed October 21, 1976.

*No mining claims were recorded with the BLM within the WSA as of September 17, 1984.

State and private ownership is identified only inside the WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985



MESITA BLANCA

have moderate potential because of poor access and remoteness from potential cinder markets.

b. Sand and Gravel

There is a moderate potential in the WSA for the development of sand and gravel resources in Quaternary and Tertiary fluvial sediments.

MINERAL RESOURCES POTENTIAL OF THE MESITA BLANCA WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Paleozoic and Mesozoic continental and marine sedimentary rocks	Low	--
Coal	Mesaverde group continental margin sedimentary rocks	Low	--
Uranium	Sandstone channel and unconformity-related deposits in Tertiary and Cretaceous rocks	Moderate	16,400
Nonenergy Minerals			
Cinders	Quaternary basaltic cinder cones	High Moderate	300 2,000
Sand and Gravel	Quaternary and Tertiary fluvial sediments	Moderate	800

Note: *Acreage was not calculated for areas with low potential.

B. Watershed

The Mesita Blanca WSA is located within the Blaines Lake and Nations watersheds. Two small areas were identified from the Phase I watershed survey that are in the critical erosion condition class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. Watershed plans will be developed on the Stokes Flat and Headquarters allotments within the WSA and watershed work will be done to improve the critical erosion areas to moderate. Runoff in the WSA averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are within the Mesita Blanca WSA. All three allotments are run as year-round cow-calf operations. The specific dates of grazing the WSA in relation to the total allotment depends on the availability of forage and the permittee's rangeland management and livestock management practices. The Rancho Allegre Cattle Company has an ongoing Allotment Management Plan (AMP) developed in cooperation with the BLM.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Rancho Allegre	79,578	11,880	11,219	14%
Stokes Flat	10,690	2,400	4,570	43%
Headquarters	17,969	2,340	640	4%
TOTAL			16,429	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage conditions, availability of livestock water, supplementary salt, minerals, or protein, breaking ice on livestock waters, and performing normal maintenance on fences, dirt tanks, and pipelines.

Most of the daily ranch operations are performed using vehicles. Normal maintenance of the rangeland developments would utilize motorized vehicles such as a pickup truck or a bulldozer to clean dirt tanks. A pickup truck would be used to carry needed supplies for maintenance repairs, to transport supplemental feed, and to provide transportation for the permittee when checking on general rangeland and livestock conditions.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Headquarters	3 miles of fence
Stokes Flat	8 miles of fence
Rancho Allegre	5 miles of fence 6 miles of pipeline 4 drinking troughs 5 dirt tanks

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

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3. Potential Rangeland Developments

No specific rangeland developments have been planned for the WSA at this time.

D. Timber Harvest

The Mesita Blanca WSA is generally of an open character with scattered pinyon-juniper woodlands occurring on the ridges, mesa sides, and hilly areas. Most of these woodlands are of small size and volume, occurring in open stands on the steeper terrain of the area. There are approximately 4,000 cords of standing wood available in the WSA for such things as firewood and fence posts.

These pinyon-juniper stands offer only limited potential as sources of firewood and fence posts because of their low volumes. This limited potential is reduced further by the location of most of the stands which are not easily accessible by vehicle.

E. Recreation

Existing recreational use in the WSA is low with most current use and potential for future use occurring at the 500-foot high Red Hill Cinder Cone and lava flow.

The WSA offers opportunities for rockhounding and geologic sightseeing. Some deer hunting also occurs, but low game populations (estimated .3 deer per section) limit hunter success. Light levels of off-road vehicle (ORV) use are also associated with these activities in the area.

F. Education/Research

The archaeological resources in the WSA have been the subject of research in the past and offer outstanding opportunities for future research uses.

Opportunities for environmental education in the WSA are derived from geologic features and cultural resources. However, the distance from population centers reduces the likelihood that this area will be used for environmental education by institutions.

G. Native American

There are no known Native American religious or cultural uses in the WSA. The Mesita Blanca WSA is located approximately 5 miles southwest of Zuni Salt Lake, an important Native American religious and cultural site. However, it is not known at this time if religious uses centered at Zuni Salt Lake also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land withdrawn within the WSA.

I. Wildlife

No wildlife management actions are planned within the WSA at this time.

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IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of the Mesita Blanca WSA is impacted primarily by rangeland developments and watershed control structures. These impacts are not typically screened by topography or vegetation and many are visible over a wide area in the WSA.

The Mesita Blanca WSA contains 9 livestock watering structures (dirt tanks and drinking troughs), 6 miles of buried pipeline, and 16 miles of fences. Access to these rangeland developments is provided by approximately 20 miles of vehicle routes.

The human impacts in the Mesita Blanca WSA result from ranch operations. Some of the access routes would be closed and would return to a natural condition as a result of wilderness management. Other routes would continue to be used occasionally by the permittee to perform necessary maintenance of rangeland developments. These routes would continue to be visible, but would become less of an impact due to reduced use under wilderness management.

The cumulative effects of the rangeland developments and the general lack of topographic and vegetative screening are considered to reduce the level of perceived naturalness in the Mesita Blanca WSA.

b. Solitude

The size and configuration of the WSA would allow users to find secluded spots. Because of the open character of much of the WSA, opportunities for solitude would be highest in areas with some degree of topographic and vegetative screening. Those areas would be found primarily in portions of the lava flow from the Red Hill Cinder Cone and along the bases of the isolated mesas which occur in the WSA. The mesa tops and the Cinder Cone itself, because of greater visibility, would offer less chance of avoiding the evidence of human activities both inside and outside the WSA.

Outside sights and sounds may affect the feeling of solitude in portions of the Mesita Blanca WSA. The WSA is bordered on two sides by county roads. A 345kv transmission line is located west of the WSA and is visible from higher points in the WSA as is a smaller transmission line, which is cherry-stemmed about $\frac{1}{2}$ -mile into the east side of the WSA. Large erosion control dams and an abandoned gravel pit along the eastern boundary also reduce the feeling of being alone.

c. Primitive and Unconfined Recreation

During the wilderness inventory, the Mesita Blanca WSA was not found to possess outstanding opportunities for primitive recreation.

Opportunities for primitive or unconfined recreation were not considered outstanding in the WSA because the terrain in the WSA is common to the region and it lacks the visual interest of lands to the north and east. The opportunities for recreation that do exist in the WSA consist primarily of geologic sightseeing, hiking around the Red Hill Cinder Cone and lava flow, rockhounding, and some deer hunting. There is little known recreation use in the WSA other than around the Red Hill Cinder Cone.

2. Special Features

Archaeological resources in the WSA are considered significant. The WSA contains a high density of archaeological sites representing human habitation from archaic to historic times. Seven recorded sites in the WSA are considered eligible for nomination to the National Register of Historic Places.

The WSA also has geological special features. The 500-foot high Red Hill Cinder Cone is a dominant feature in the landscape of the region. It represents a classic volcanic cinder cone and lava flow. The lava flow covers approximately 2,000 acres and contains numerous interesting lava features.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would the administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Mesita Blanca WSA as being within the Colorado Plateau Province with a potential natural vegetation of 5,787 acres of pinyon-juniper woodland and 10,642 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time from Albuquerque and 5½ hours driving time from Las Cruces, New Mexico.

B. Manageability

Several factors potentially affect the capability of the Mesita Blanca WSA to be managed as wilderness: boundary configuration, inholdings, and maintenance of rangeland developments.

An awkward boundary configuration and a lack of readily identifiable terrain features to delineate the boundary or to provide natural barriers to off-road vehicle travel would require fencing or a

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system of signs and cairns to delineate the boundaries of the wilderness area in order to reduce trespass problems.

Private surface inholdings in the Mesita Blanca WSA would not pose serious problems for wilderness management. There is a 160-acre private inholding which could require reasonable access. This access may not significantly affect wilderness values nor pose serious problems for wilderness management.

The maintenance of grandfathered rangeland developments and necessary vehicular access for ranch operations are not expected to create serious manageability problems themselves, but would result in the continued existence of human impacts and reduced opportunities for solitude in portions of the WSA.

Areas 10 to 15 miles northeast of the WSA are being leased for coal development. If regional coal development occurs, it could complicate wilderness management of this area by increasing traffic along County Road A007 on the eastern boundary of the WSA. This would increase the impact of outside sights and sounds in the WSA and increase the likelihood of trespass problems inside the designated area.

The Mesita Blanca WSA could be managed to preserve its existing wilderness values.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

This section was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

Opposition to wilderness status for the Mesita Blanca WSA has centered around conflicts with mineral and livestock interests. A large number of Catron County residents have also expressed opposition to additional wilderness areas in Catron County. Reasons for opposition included the following: the lack of naturalness of the area due to rangeland developments; lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on future rangeland developments and livestock operations; and impacts of wilderness designation on future economic development of Catron County.

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited include: underrepresentation of landforms and grasslands in the WSA in the National Wilderness Preservation System; need to preserve raptor habitat; and existence of high cultural resource values. The lack of conflict between wilderness management and livestock operations and the lack of timber resources in the WSA were also noted.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 19 letters and 52 coupons were received.

Fifteen letters and the coupons expressed disagreement with the Area Manager's nonsuitable recommendation. Among the reasons cited in support of designation were: the need to include more grassland and mesa environments in the National Wilderness Preservation System; the benefits of wilderness to wildlife; the presence of important archaeological resources; and the high geologic value of the Red Hill Cinder Cone.

Four letters expressed agreement with the nonsuitable recommendation. The WSA was felt to be nonsuitable due in large part to the degree of human impacts and probable future impacts from mineral activities. It was also felt that the area lacked outstanding opportunities for solitude and primitive recreation.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to water, soils, vegetation,

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wildlife, visual, cultural, air, recreation, realty actions, education/research, timber harvest, and Native American uses are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.
Amended Boundary	Manageability problems stemming in part from the narrow configuration of much of the WSA and impacts to naturalness were the two main issues considered during evaluation of possible boundary adjustments. Alteration of the boundary to remove impacted areas would have further aggravated manageability problems.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Saleable Minerals (Cinders, Sand and Gravel)	Within this WSA, there are 300 acres with high potential for cinders, 2,000 acres with moderate potential for cinders, and 800 acres with moderate potential for sand and gravel. The impacts on these resources would not be significant because of the availability of similar materials elsewhere; therefore, a detailed analysis is not included.
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for this WSA are the quality of the area's wilderness values, possible manageability problems associated with access and development of inholdings, and mineral potential. Although the entire Mesita Blanca WSA has moderate potential for uranium, impacts to uranium resources are not considered significant because large areas in the State have similar or better potential and are open to exploration and development. This issue was selected for detailed analysis, however, because of the area's moderate potential and because mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 16,429 acres of public land within the Mesita Blanca WSA would be recommended suitable for wilderness designation. (See Map 15-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection.

Wilderness management would preserve Mesita Blanca WSA's existing natural character and would maintain the opportunities for solitude which exist in the WSA. The archaeological sites, geologic features, and vegetation present in the WSA would be protected in a natural environment for enjoyment and study by present and future generations.

2. Impacts to Uranium Resources

Although the entire Mesita Blanca WSA (approximately 16,400 acres) has moderate potential for uranium, there are no existing mining claims in the area. It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Mesita Blanca WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for nonenergy locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full uranium potential of the area could not be assessed. However, the impacts to uranium resources are not considered significant because large areas in the State of similar or better potential would remain open to exploration and development.

3. Impacts to Livestock Grazing

The WSA presently supports 2,268 animal unit months (AUMs); these existing levels of livestock use and the maintenance of grandfathered rangeland developments would continue under wilderness management. Motorized access to maintain 5 dirt tanks, 6 miles of pipeline, and 4 drinking troughs would be by permit only.

It is anticipated that few additional rangeland developments would be needed to improve grazing management in the WSA. For this reason, it is felt that wilderness designation would not have significant impacts on livestock grazing in the WSA.

It should also be noted that in many cases wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from limitations on design and placement, rather than the prohibition, of new rangeland developments.

Wilderness designation would result in the modification of the current Allotment Management Plan (AMP) for Rancho Alegre and the development and implementation of AMPs for the Headquarters and Stokes Flat allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

If the region experiences a population increase as a result of coal development north of the WSA, the impacts to livestock operations from closing the area to unauthorized vehicle use could be substantial.

B. No Action/No Wilderness (Proposed Action)

Under the No Action/No Wilderness Alternative, the entire 16,429 acres of public land within the Mesita Blanca WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and woodcutting. Coal development is predicted in the region but not within the WSA.

1. Impacts to Wilderness Values

The wilderness values and special features of the Mesita Blanca WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

Although the area would probably retain its naturalness and outstanding opportunities for solitude in the short-term, vehicle use, new rangeland developments, and woodcutting could result in degradation of

wilderness values in the long-term. Coal development within the region could result in increased human presence in the vicinity of the WSA. This could further reduce opportunities for solitude in the WSA.

2. Impacts to Uranium Resources

There would be no impacts on uranium resources under this alternative. Mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 Code of Federal Regulations 3809).

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing. Motorized vehicles could be utilized as needed.

APPENDIX 16

PRESILLA WSA (NM-020-037)

I. GENERAL DESCRIPTION

A. Location

The Presilla Wilderness Study Area (WSA) is located east of the Rio Grande, about 2 miles east of Socorro, New Mexico.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Loma de las Canas, New Mexico quadrangle at the 7½-minute scale.

B. Climate and Topography

The Presilla WSA is characterized by a semiarid climate with clear and sunny days, large diurnal temperature ranges, low humidity, and scant rainfall.

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours, 40° to 50°F, and moderately cold at night, 15° to 30°F. Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 mph.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The western portion of the WSA contains mesa benchlands cut by large arroyos, while the eastern portion is dominated by rugged limestone and sandstone hills which, in places, form parallel ridges trending north-south. Low granitic ridges rise slightly above the surrounding terrain in T. 3 S., R. 1 E., Sections 11 and 14. There are also areas of coppice dunes and scenic box canyons. Elevation varies from 4,700 feet to 5,450 feet. Drainages include portions of Arroyo del Tajo, Arroyo de la Presilla, Arroyo de Tio Bartolo, and Arroyo Tinajas.

C. Land Status

The WSA contains approximately 8,680 acres of public land. There are no State or private inholdings. (See Map 16-1 for land status within the WSA boundary.)

Approximately 760 acres of the Presilla WSA are located within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Extension Area due to its proximity to targeting locations within the Missile Range proper.

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

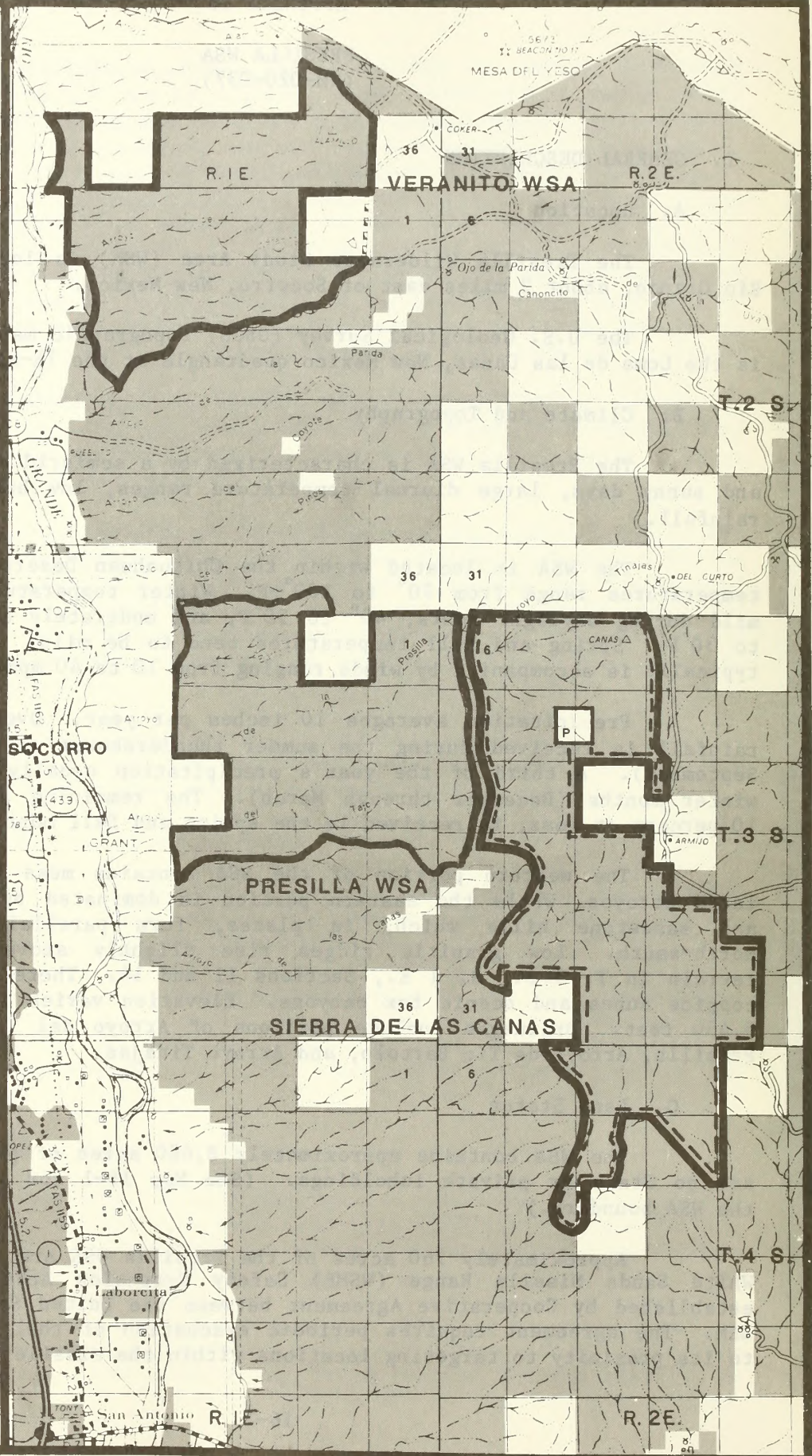
- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-1
MAP 17-1
MAP 20-1
LAND STATUS



D. Access

The Presilla WSA has excellent physical and legal access. The Quebradas road forms the eastern boundary of the WSA and the Wilson Hill road parallels the western boundary of the WSA. Roads also form the northern and southern boundaries of the WSA. In addition to these boundary roads, there are vehicle routes running throughout the WSA.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 8,680 acres as wilderness.	°Manage 8,860 acres without wilderness protection.
-Close 10 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-8,680 acres would be closed to energy minerals leasing. The closed area includes 8,700 acres with moderate potential for geothermal and 5,500 acres with moderate potential for uranium.	-8,860 acres would remain open to oil and gas leasing. About 200 acres within the Tinajas ACEC would be subject to protective stipulations. Development of leases in the area is unlikely.
-8,680 acres would be closed to mining claim location. The closed area includes 4,300 acres with moderate potential for barite, fluorspar, lead, and zinc and 900 acres with moderate potential for copper.	
-8,680 acres would be closed to mineral material sales. The closed area includes 1,200 acres with moderate potential for sand and gravel.	
-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.	-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.
-Existing interpretive signs and visitor register at the Arroyo del Tajo pictograph site would be relocated outside the area.	-Interpretive signs and visitor register at Arroyo del Tajo pictograph site would remain in place.

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SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues
	Wilderness Values
All Wilderness (8,680 acres)	Wilderness protection would maintain the area's existing natural values and could improve them by placing continued emphasis on rehabilitation of existing vehicle trails and drill pad scars. The Presilla WSA's outstanding opportunities for solitude, outstanding opportunities for dayhiking, backpacking, camping, photography, sightseeing, and nature study, and special cultural features would also be maintained.
No Action/No Wilderness (8,680 acres) (Proposed Action)	The Presilla WSA would probably retain its existing wilderness values in the short-term; however, mineral exploration, mining claim assessment work, and continued vehicular access for recreational uses would reduce naturalness and opportunities for solitude in the long-term.

II. EXISTING RESOURCES

A. Geology

The Presilla WSA is situated within the Basin and Range physiographic province. Specifically, it is located in the Socorro trough, a faulted, tectonic depression filled with unconsolidated sediments. The WSA is also situated within the Rio Grande rift, a tensional feature in the earth's crust, which extends from southern Colorado to the El Paso, Texas vicinity. Records of past earthquakes and pediment surfaces offset by fault scarps indicate that tectonic forces are still active within the rift. The Socorro vicinity is especially seismically active.

The western portion of the WSA contains late Tertiary valley-fill sediments of the Santa Fe formation and Quaternary alluvium. The eastern portion of the WSA contains outcrops of Pennsylvanian age Madera limestone and several exposures of Precambrian granite.

B. Water

The Presilla WSA is located within the Rio Grande Basin. Surface water drainage is integrated with the Rio Grande by means of a system of ephemeral arroyos. Surface flows occur immediately after rainfall, usually as a result of summer thundershowers. Flow periods are short and may be widely spaced in time due to sporadic rainfall patterns. Major drainages in the WSA include portions of Arroyo de la Presilla, Arroyo Tinajas, and Arroyo del Tajo.

Portions of four watersheds are within the Presilla WSA. In general, the area is classified in the slight sediment yield class and in the moderate erosion class. Sheet and gully erosion occur following summer thundershowers and all four watersheds contribute some sediment to the Rio Grande.

Major underground aquifers in the WSA are Pennsylvanian age Madera limestone, Tertiary age Santa Fe formation, and Quaternary age alluvium. Water quality was analyzed from Pueblito Well which is on the southern boundary of the WSA, and is considered representative of the WSA. The analysis indicates a high dissolved solids content due to mineralization. Ground water quality is within the recommended limits for livestock and wildlife use.

C. Soils

Gravelly soils on steep slopes cover most of the WSA. Limestone rock outcrop and some basalt is common on steep slopes. Soil depths range from shallow to deep and textures are predominantly gravelly to extremely gravelly sandy loams and loams. All of the soils in the WSA are calcareous in the substratum and some have an indurated caliche layer. There is a small area of deep sandy soils on the gentler slopes between Arroyo del Tajo and Arroyo de la Presilla along the western boundary.

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D. Vegetation

1. General

The vegetation and associated range sites within the Presilla WSA consist of three major types:

<u>Vegetation Type</u>	<u>Range Site</u>	<u>Federal Acres</u>
Creosote	Gravelly, Limestone hills, Igneous hills	7,403
Desert shrub	Sandy	1,261
Pinyon-juniper	Limestone hills	16

The creosote type is the most prevalent in the WSA and contains other shrubs such as snakeweed, Mormon tea, and mesquite. Common grasses include fluffgrass, black grama, threeawns, dropseeds, bush muhly, and galleta. Annuals are an important part of this type and include annual snakeweed, common bahia, buckwheats, spectaclepod, sixweeks grama, sixweeks threeawn, and windmill grass.

The desert shrub type in the WSA is dominated by broom dalea and occurs on coppice dunes and deep sandy soil. Other shrubs are mesquite, snakeweed, sand sage, littleleaf sumac, and winterfat. Common grasses include fluffgrass and dropseeds.

Pinyon-juniper is found on a small area in the southeast part of the WSA, with one-seed juniper being the most common tree. Shrubs include snakeweed, rabbitbrush, squawbush, brickelbush, and Apacheplume. The common grasses are fluffgrass and slim tridens.

2. Threatened or Endangered Plant Species

Spellenberg (1977) and the New Mexico State Heritage Program (1983) do not list any threatened, endangered, or State-listed plant species in the WSA. The following species have been encountered near the area and probably occur within the WSA:

Species: Cryptantha paysonii

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Nearly level limestone shelves and ridgetops.

Species: Thelypodopsis purpusii

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Canyons and arroyo bottoms.

E. Wildlife

The WSA supports approximately 213 wildlife species including 27 mammal species, 41 reptile and amphibian species, and 145 resident and migratory bird species. Great horned owls have been observed roosting in canyon walls in Arroyo del Tajo. Other raptors, including red-tailed hawks, prairie falcons, and Cooper's hawks, populate the area. Doves, scaled quail, and various songbirds can also be seen. Tinajas (natural sinkholes in the dry arroyo bottoms) provide water on an intermittent basis, thus creating important microhabitats which attract and concentrate many species. Arroyos with abundant shrubs offer good habitat conditions for wildlife. Mammals which can be found in this locale include woodrats, jackrabbits, rock squirrels, gray fox, and mule deer. Rattlesnakes, side blotched and collared lizards, and coachwhip snakes are also present.

The Presilla WSA contains two major Standard Habitat Sites (SHS's). These SHS's are described briefly below.

1. Creosote Hill

The principal areas in the creosote hill SHS are the rolling upland hills east of the Rio Grande. Ground cover is sparse where creosote occurs in thick stands. This area has many arroyos that run toward the river. The arroyo bottoms have thick stands of Apacheplume and littleleaf sumac with creosote on the south-facing slopes and black grama on the north-facing sides. Some of the arroyos are several hundred meters across. The most diversity in plants and animals occurs in the arroyo bottoms, with little species diversity between the arroyos where creosote is the dominant plant. The most common wildlife species within this SHS are coyotes, black-tailed jackrabbits, and desert cottontails.

2. Mesquite Rolling Upland

The mesquite rolling upland SHS is a narrow band of vegetation that begins at the foothills heading east from the Rio Grande. It divides the riparian vegetation along the river from the creosote hills. It provides good cover for many species. This area is often very hot in the summer, lacking the breezes found in the hills and the humidity from the river. Ground cover is sparse and erosion is quite evident as some of the mesquite clumps are several feet higher than the surface in between. The most common wildlife species within this SHS are coyotes, black-tailed jackrabbits, desert cottontails, a few mule deer, and various songbirds.

F. Visual

The Presilla WSA is characterized by rolling benchlands which rise above the Rio Grande floodplain in the west and rugged north-south trending ridges of alternating bands of red sandstone and white limestone in the eastern portion of the area. These landforms have been cut by numerous drainages, producing a diverse visual landscape. The Arroyo del Tajo, Arroyo de Tio Bartolo, and Presilla Boxes are localized areas of outstanding visual quality characterized by various erosional features, including water-sculpted limestone and granite walls.

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High points in the WSA offer vistas of the Rio Grande Valley and the Magdalena Mountains to the west and the Sierra de las Canas to the east. The visual qualities of the WSA are given added significance by their location. Rising above the eastern bank of the Rio Grande, the WSA is an important component in the visual landscape of the City of Socorro and for travelers along U.S. Highway 60 and Interstate 25.

The entire WSA is within a Visual Resource Management Class IV area.



West end of the Arroyo del Tajo Box.

G. Cultural

The WSA contains seven known cultural sites ranging from small structures of unknown function and date, an archaic lithic scatter, and a quarry, to a unique pictograph site relating to a Piro ceremonial site.

Previous BLM and private work in the area indicate that more than 1 mile from the river, the site density falls off, and those sites that do exist are usually associated with water sources or sand dunes.

A site of major significance in the WSA is the Arroyo del Tajo pictographs. They consist of over 75 figures painted in a shallow rock shelter on the north side of the arroyo. The figures represent a series of events by using various pueblo religious figures and symbols. They were most likely painted by Piro Indians, a group that inhabited over 20 settlements along the Rio Grande before their abandonment after the Pueblo Revolt of 1680. A pictograph site representing a series of events is virtually unique in the Southwest.

H. Air

The quality of air within the Presilla WSA is generally good. The air quality in the WSA does not exceed State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

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III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resources potential of the lands within the WSA is shown on Map 16-2 and the locations of mining claims and lands under mineral leases are shown on Map 16-3.

MINERAL RESOURCES POTENTIAL OF THE PRESILLA WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Mesozoic (?) and Paleozoic continental and marine sedimentary rocks	Low	--
Geothermal	Active igneous intrusions along the Rio Grande rift	Moderate	8,680
Uranium	Veins and fractures in Precambrian granite and stratabound deposits in the Santa Fe formation	Moderate	5,500
Nonenergy Minerals			
Barite, Fluorspar ^{a/} , Lead ^{a/} , Zinc ^{a/}	Vein and replacement deposits in Precambrian and Paleozoic rocks	Moderate	4,300
Copper ^{a/}	Stratabound deposits in the Pennsylvanian Moya formation	Moderate	700
Sand and Gravel	Quaternary alluvium and Santa Fe formation basin fill deposits	Moderate	1,200

Notes: *Acreage was not calculated for areas with low potential.

^{a/}Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

1. Energy Minerals

a. Oil and Gas

As of December 1, 1984, there were two post-Federal Land Policy and Management Act (FLPMA) oil and gas leases in the WSA.

No exploration activities have occurred in the WSA. The nearest oil and gas test wells are north of the WSA in T. 1 S., R. 1 E.,

Sections 13 and 26. The wells were abandoned at depths of 800 and 860 feet with no reported shows of oil or gas.

The potential for discovery of oil and gas in the WSA is low. Heat and faulting associated with the Rio Grande rift have probably prevented the accumulation and entrapment of petroleum. A special stipulation is attached to 200 acres in T. 3 S., R. 1 E., Section 14 to protect the cultural values in the Tinajas Natural Area.

b. Geothermal

In the Socorro area, the presence of hot springs, high heat flow, steep geothermal gradients, and geophysical evidence of shallow magma chambers indicate that a heat source underlies the area which may extend eastward under the WSA. The potential for the occurrence of a low temperature heat source which could provide heat for direct-use applications is moderate.

c. Uranium

Uranium mineralization occurs in veins and fractures in granite outcrops in the eastern portion of the WSA. Higher than normal radioactivity and anomalous geochemical values also occur in the granite. Geochemical uranium values are 5 to 200 times the value for normal granite, while radioactivity is 3 to 24 times normal background radiation. The potential for discovery of a uranium ore deposit is moderate.

2. Nonenergy Minerals

As of September 17, 1984, there were two post-FLPMA mining claims recorded with BLM in the WSA.

a. Fluorspar, Barite, Lead, Zinc

There are two known fluorspar deposits in or near the WSA: the Gonzales prospect in T. 3 S., R. 1 E., Section 2 and the La Bonita prospect in T. 3 S., R. 1 E., Section 12. Fluorspar and barite with minor amounts of lead and zinc occur along faults and fractures in Precambrian granite and in the Madera limestone. These deposits are small and appear to have low to moderate potential for discovery of economic deposits.

b. Copper

Copper mineralization occurs about 1½ miles north of the WSA in T. 2 S., R. 1 E., Section 26 at Minas del Chupadero. The mineralization occurs as irregular stratabound deposits in sandstones in the Pennsylvanian Moya formation. The potential appears to be moderate because deposits of this type could extend into the extreme eastern portion of the WSA.

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-2

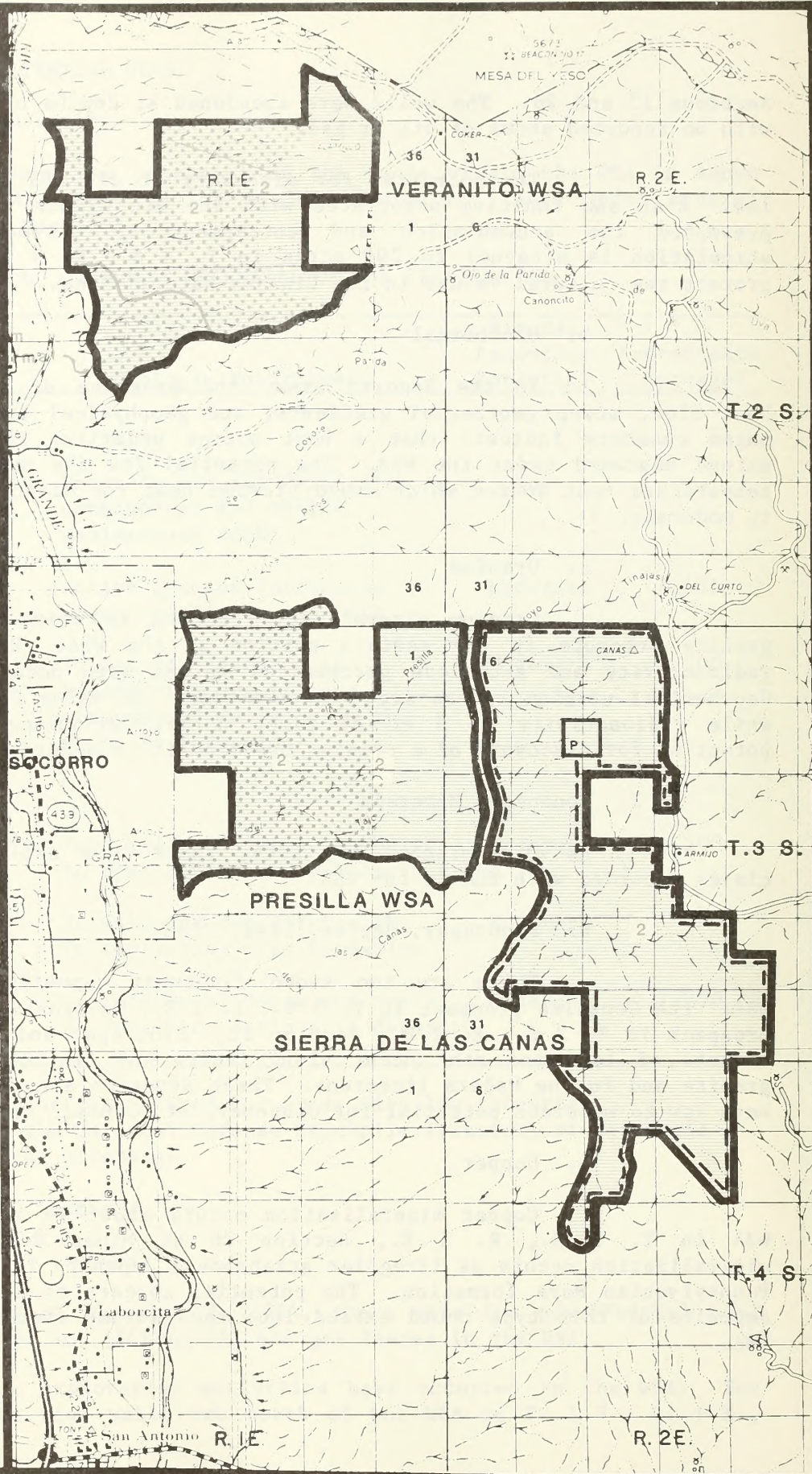
MAP 17-2

MAP 20-2

ENERGY MINERAL
RESOURCE POTENTIAL*

- Geothermal
- Uranium

*Areas of high (1) and
moderate (2) mineral
potential are shown for
lands within the WSA; the
potential may extend outside
the WSA boundary. Areas of
low potential are not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-3

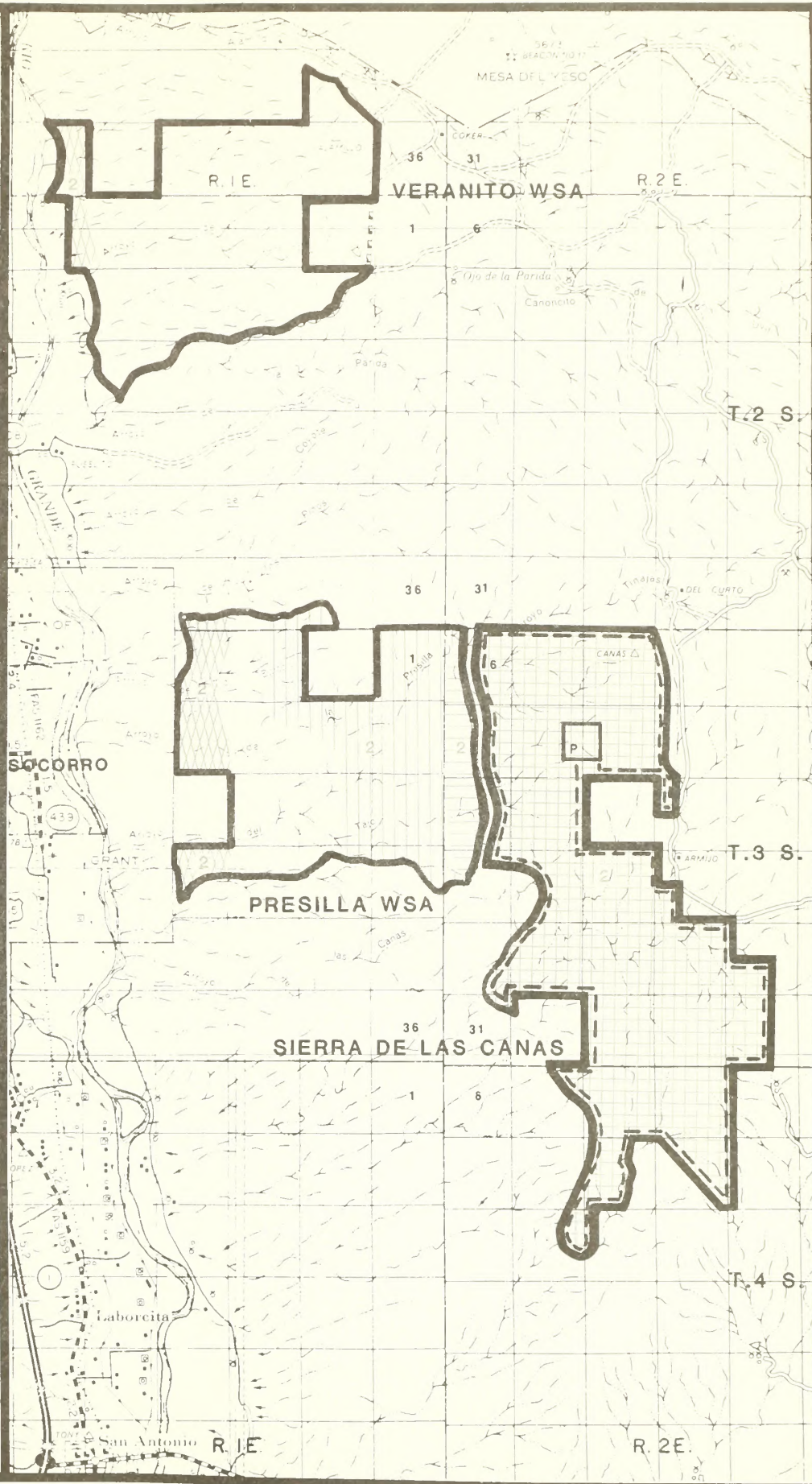
MAP 17-3

MAP 20-3

**NONENERGY MINERAL
RESOURCE POTENTIAL***

- Fluorspar, Barite
Lead, Zinc,
- Copper
- Sand and Gravel

*Areas of moderate (2)
mineral potential are shown
for lands within the WSA;
the potential may extend
outside the WSA boundary.
Areas of low potential are
not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

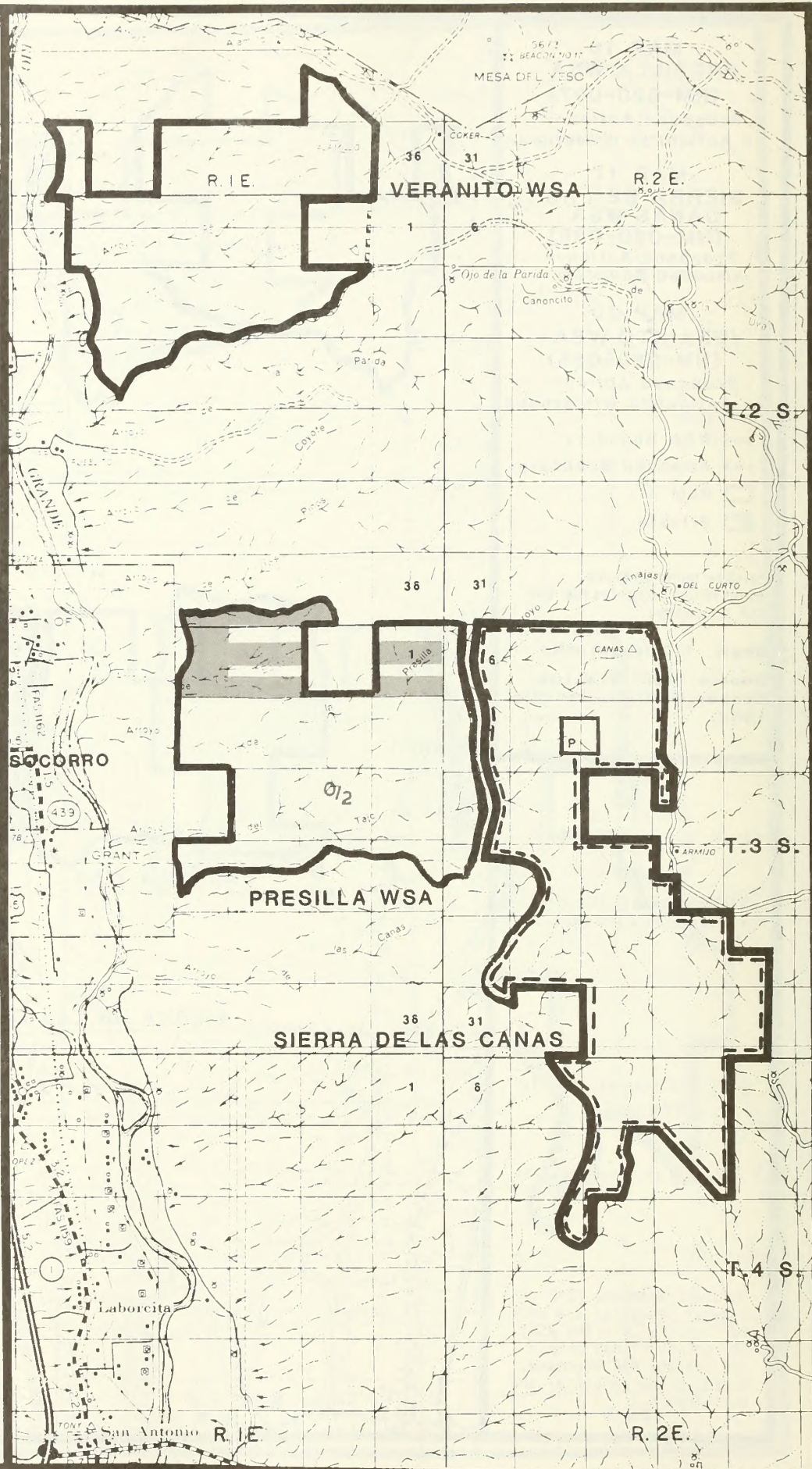
**MAP 16-4
MINING CLAIMS AND
MINERAL LEASES***

□ Post-FLPMA Oil
and Gas Leases

1/1 { Pre-FLPMA Mining
Claims per Section
Post-FLPMA Mining
Claims per Section

FLPMA was passed October 21,
1976.

(Claim information from BLM
records dated September 17,
1984; claims which overlap
more than one section are
counted in each section in
which they occur.)



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c. Sand and Gravel

Sand and gravel occur in the Santa Fe formation and in Quaternary alluvium within the western portion of the WSA. The WSA has moderate potential for the development of these resources.

B. Livestock Grazing

1. Allotments

All of one and parts of four grazing allotments are within the boundary of the Presilla WSA. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Tio Bartolo 1258	4,806	365	4,806	100%
Four Hills 1259	6,132	360	406	7%
Las Canas 1262	12,312	1,560	941	8%
Rio Grande 1288	4,405	315	916	21%
Arroyo del Tajo 1287	4,320	264	1,611	37%
TOTAL			8,680	

Note: ^{a/}Information shown in table reflects only Federal acres and animal unit months (AUMs).

2. Ranch Management

Vehicle routes in the WSA are used by permittees to check the condition of livestock and to deliver salt and minerals to livestock. There are no rangeland developments in the WSA which require motorized access for maintenance.

A $\frac{1}{4}$ mile of interior fence on the Four Hills allotment (1259) and the following boundary fences are the only rangeland developments on public land located within the WSA.

Boundary Fences:

Four Hills (1259) and Tio Bartolo (1258)	2 $\frac{3}{5}$ miles
Tio Bartolo (1258) and Las Canas (1262)	1/10 mile
Tio Bartolo (1258) and Arroyo del Tajo (1287)	1/5 mile
Tio Bartolo (1258) and Rio Grande (1288)	1 $\frac{7}{10}$ miles
Arroyo del Tajo (1287) and Las Canas (1262)	2 $\frac{3}{10}$ miles
Arroyo del Tajo (1287) and Rio Grande (1288)	2/5 mile

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

C. Recreation

The Presilla WSA lies 2 miles east of the City of Socorro and has excellent public access. This excellent access and the presence of interesting landforms including sand dunes, colorful arroyos, and scenic box canyons have resulted in a high level of recreational use relative to other public land in the vicinity of Socorro. Traditional uses in the area include deer and quail hunting, off-road vehicle (ORV) use along the arroyos and vehicle routes, rock collecting, hiking, camping, and rock climbing. The major north-south vehicle route through the WSA is designated as open to ORV use. The remainder of the WSA is closed to ORV use. Despite this designation, ORV use occurs along the larger arroyos and on other vehicle routes.

Publicity resulting from the BLM's designation of the Tinajas Natural Area of Critical Environmental Concern (ACEC) and interpretation at the Arroyo del Tajo pictograph site has resulted in increased public awareness and use, especially archaeological sightseeing in the Arroyo del Tajo area.

The recreational potential of the Presilla WSA as a day use area is high because of natural and cultural resources, proximity to the City of Socorro, and excellent public access.

D. Education/Research

The WSA has been utilized by the New Mexico Institute of Mining and Technology for geologic studies, research purposes, and for organized recreational outings. The potential for future educational and research uses in the WSA is high due to its proximity to the City of Socorro and the archaeological and natural resources of the area.

E. Cultural

In May 1981, the 1,280 acres surrounding the Arroyo del Tajo pictographs were designated an ACEC under the name Tinajas Natural Area. A short trail leads visitors to a register and the pictograph site.

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IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

Pre-Federal Land Policy and Management Act (FLPMA) and post-FLPMA impacts affect the quality of the naturalness of the Presilla WSA. These impacts are discussed separately.

Pre-FLPMA impacts on the WSA's naturalness include 5 miles of once bladed vehicle routes, approximately 10 miles of barbed wire fence, 8 mineral prospecting pits, and 2 mine shafts.

The vehicle routes through the area are the most noticeable impact on naturalness. The route along the Arroyo Tinajas and south into the center of the WSA is evident from vantage points on the western half of the area. The routes are most noticeable where they cross hillsides or the sides of the larger arroyos.

The mineral prospecting pits are all located in T. 2 S., R. 1 E., Sections 34 and 35. This concentration reduces the apparent naturalness of this portion of the WSA. The mine shafts are located near Arroyo Tinajas. The cumulative impact of vehicle routes, prospect pits, and mine shafts reduces the apparent naturalness of the central and northern portions of the WSA.

Human activities outside the WSA have a slight impact on the apparent naturalness of portions of the WSA. An old fluorspar mine and associated structures and dumps are located in T. 3 S., R. 1 E., Section 2. This section is almost surrounded by the WSA. The mine and associated development are visible from portions of the WSA. A large windmill and storage tank are located on a high ridge adjacent to the southern boundary of the WSA. The windmill is visible from most points in the central and southern portions of the WSA. The inactive mine and the windmill detract slightly from the apparent naturalness of portions of the WSA.

The eastern and western portions of the WSA generally appear natural. The impacted central and northern portions of the WSA cannot be separated from the WSA to improve the overall naturalness of the area. Although portions of the WSA appear natural, the developments in the central portion of the WSA reduce the overall naturalness of the WSA.

Post-FLPMA impacts on the WSA's naturalness include approximately 5 miles of access roads and 2 drill pads constructed in 1978 and 1979. Over 2 miles of these roads were originally constructed prior to the passage of FLPMA. However, they were not maintained after construction, although maintenance was needed, and thus failed to meet the definition of a road during wilderness inventory. The roads and drill pads are located in the center of the WSA and reduce the naturalness of the WSA's core.

While portions of the WSA are natural, mining activity and vehicle routes have impacted the overall quality of the naturalness of the Presilla WSA.

b. Solitude

The Presilla WSA contains numerous large east-west trending arroyos. The extensive, convoluted drainage systems and the resulting topographic screening offer visitors secluded areas and result in outstanding opportunities for solitude.

Opportunities for solitude are slightly reduced in Arroyo del Tajo because the scenic quality, geologic features, pictographs, and ease of access tend to concentrate visitors in this area. The feeling of solitude is impacted slightly in the Arroyo del Tajo area by a large windmill and storage tank which are located on a ridge overlooking the pictograph site.

c. Primitive and Unconfined Recreation

The Presilla WSA contains a variety of landforms which provide visual interest, including colorful arroyos with interesting erosional features such as narrow water-sculpted limestone and granite boxes, sand dunes, and steep ridges. The WSA also contains an interpretive site based on significant Piro Indian pictographs.

The natural and cultural features of the WSA provide outstanding opportunities for day hiking, backpacking, camping, photography, various types of sightseeing, and nature studies.

2. Special Features

The Presilla WSA contains the Arroyo del Tajo pictograph site which consists of more than 75 figures representing Piro Pueblo religious figures and symbols. The pictograph site, representing a series of events, is virtually unique in the Southwest. Arroyo del Tajo, Arroyo Tinajas, and Arroyo de Tio Bartolo also contain erosional features which are highly scenic. The value of these supplemental qualities is enhanced by their proximity to the City of Socorro and relative ease of access.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

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4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Presilla WSA as being within the Chihuahuan Desert Province. The potential natural vegetation is grama-tobosa shrubsteppe.

b. Distance from Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours, Las Cruces New Mexico within 3 hours, and El Paso, Texas within 4 hours driving time of the WSA.

B. Manageability

Both positive and negative factors affect the potential of the Presilla WSA to be managed as wilderness. These include existing access, visibility of boundaries, concentration of visitor use, special features, and the area's existing naturalness.

Positive factors influencing the manageability of the WSA include existing access and the visibility of boundaries. Visitors can enter the area from almost any point and disperse throughout the area. Visitors may enter and leave the WSA without leaving land administered by the BLM.

On-the-ground management of the WSA would be enhanced by the visibility of its boundaries. Most of the boundaries are along maintained roads. The boundaries are easy to identify and would reduce conflicts from unauthorized uses or unintentional trespass.

There is a potential for concentrated visitor use in the Arroyo del Tajo box because of the ease of access and the area's special features. Concentration of use in the Arroyo del Tajo could diminish the ability to manage this small portion of the area for outstanding solitude.

The easternmost portion of the Presilla WSA (760 acres) lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Extension Area must be evacuated of all human inhabitants during missile firings. The availability of the Extension Area is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Extension Area to recover missile debris and to place tracking equipment. Potential wilderness manageability problems associated with WSMR access needs would not be significant because the area involved within the WSA is small.

A significant issue concerning the manageability of the Presilla WSA as wilderness is the area's existing quality of naturalness and the

potential for rehabilitating the roads in the area. Rehabilitation would require hauling in soil to recontour some of the road cuts across slopes, knocking down the road berms, and reseeding the disturbed area with native species. These measures could reduce the impact of the roads on the area's apparent naturalness. With adequate rainfall and rehabilitation measures, the roads could become less noticeable in the long-term. However, these rehabilitation measures offer poor potential in returning the WSA to a natural state.

Because of the WSA's existing low quality naturalness and poor potential for returning the area to a substantially natural state, the BLM could not manage the area to provide wilderness values.

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V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

The New Mexico Wilderness Study Area Proposals (BLM 1980) deferred a decision on the Presilla unit's suitability as a WSA to allow the BLM time to evaluate the rehabilitation potential of the area's post-Federal Land Policy and Management Act (FLPMA) mining developments. During public review of the proposal to defer the decision, public comments were received in the form of personal letters, form letters, and petitions.

Eleven personal letters favored wilderness review of the Presilla unit. Supporting reasons included size, naturalness, opportunities for solitude and recreation, and supplemental values. Form letters and petitions received during the comment period listed the Presilla unit as one of the areas supported for further wilderness review.

Four personal letters opposed further wilderness review of the Presilla unit. Supporting reasons included mining and range impacts, the lack of opportunities for solitude, and potential resource conflicts.

After a reevaluation of the Presilla unit's wilderness characteristics based on these public comments, impacts to the area's naturalness, and the potential for rehabilitation of the post-FLPMA developments, the BLM released the entire Presilla area from further wilderness review in the New Mexico Wilderness Study Area Decisions (BLM 1980).

The BLM decision to release the entire Presilla area from further wilderness review was protested to the BLM New Mexico State Director. The State Director denied the protest and his decision was appealed to the Interior Board of Land Appeals (IBLA).

After reviewing the case, the IBLA quoted the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) which states, "...impacts resulting from unauthorized activities will not disqualify an area from WSA status." IBLA then reversed the BLM decision denying the protest and remanded the Presilla unit to the BLM as a WSA. As a result of this ruling, Presilla is a WSA and its suitability for wilderness designation was evaluated in the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984).

During the public comment period on the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984), a total of 44 personal inputs were received on the Presilla WSA. Thirty inputs were in favor and fourteen were opposed to wilderness designation.

Support for wilderness designation of the Presilla WSA centered around the WSA's proximity to the community of Socorro, which was felt to enhance its recreational and solitude values as well as supplemental values represented by the Arroyo del Tajo pictograph site and the WSA's visual resources. Several commentators felt the BLM had improperly considered

post-FLPMA impacts in assessing the naturalness of the WSA. It was also noted that the BLM failed to reclaim the post-FLPMA mining roads.

Fourteen personal inputs agreed with the recommended action for the Presilla WSA, but provided no new information. White Sands Missile Range (WSMR) noted that approximately 760 acres in the easternmost portion of the WSA is in the Safety Extension Area and that WSMR would be opposed to wilderness designation of this portion of the WSA.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table issues related to water, soils, vegetation, wildlife, visual, cultural, air, recreation, education/research, and the WSMR Safety Extension Area are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.
Alternate Designation -- Area of Critical Environmental Concern for Visual Resources	After consideration of this alternative, it was decided that it would be more appropriate to consider the scenic resources of a larger area of the Rio Grande Valley in the upcoming land use plan rather than restricting consideration of visual resources to this WSA.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/ No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues identified for this WSA are the quality of the area's wilderness values, the area's special features, and mineral potential. Mining activity and road construction have affected the area's naturalness and the BLM's ability to manage the area as wilderness.

Although no significant impacts to minerals were identified, the minerals issue is analyzed because of the Presilla WSA's moderate potential for geothermal, uranium, barite, fluorspar, lead, zinc, and copper and because mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under the All Wilderness Alternative, the entire 8,680 acres of public land within the Presilla WSA would be recommended suitable for wilderness designation. (See Map 16-1 for the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide the existing naturalness, outstanding opportunities for solitude, outstanding opportunities for dayhiking, backpacking, camping, photography, sightseeing, and nature study, and special cultural features in the Presilla WSA with long-term Congressional protection.

Wilderness designation would enhance the Presilla WSA's natural values because it could result in a greater amount of rehabilitation on the post-FLPMA roads. Although the roads have poor potential for rehabilitation, in the long-term the roads could become less noticeable in the context of the entire WSA.

2. Impacts to Minerals

It is assumed that after wilderness designation, no new geothermal leases would be issued. If a discovery were made in an area adjacent to the WSA, geothermal resources would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the geothermal potential in the Presilla WSA. Although current information indicates that the entire Presilla area has moderate potential for geothermal resources, the impacts of wilderness designation would not be significant because the Presilla WSA is only a small part of an extensive surrounding area of equal potential. Other areas around Socorro would prove as valuable for exploration and development.

It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Presilla WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims

PRESILLA

would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full potential of the area could not be assessed. The opportunity to explore the following areas would be forgone under this alternative: 5,500 acres with moderate potential for uranium, 4,300 acres with moderate potential for barite, fluorspar, lead, and zinc, and 700 acres with moderate potential for copper.

3. Impacts to Livestock Grazing

Livestock grazing is permissible and compatible with wilderness. Wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Generally, motorized access within the designated wilderness would not be permitted. Because there are no water developments or other rangeland developments in the WSA which require regular maintenance, there would be no significant impacts to existing livestock operations. The relatively small size of the WSA and existing access patterns along the periphery of the WSA would make it relatively easy to inspect and maintain fences by horseback.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 8,680 acres of public land in the Presilla WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and recreation. Mining claims could be located in the area. Future market conditions could result in mineral exploration in the area, although based on the mineral potential of the area, development appears unlikely.

1. Impacts to Wilderness Values

The wilderness values and special features of the Presilla WSA would not be provided with long-term Congressional protection. Management of the area as specified in existing land-use plans would be subject to administrative change in the long-term. Construction of additional vehicle routes and surface disturbance associated with mining claims assessment work could impact wilderness values in the long-term. Unrestricted recreation use could result in visitor concentrations which would reduce opportunities for solitude and degrade the quality of primitive recreation opportunities.

2. Impacts to Minerals

There would be no impacts on minerals under this alternative. Energy minerals leasing would continue. Locatable mining activities would be managed to prevent unnecessary and undue degradation under the Surface Management Regulations (43 Code of Federal Regulations 3809).

3. Impacts to Livestock Grazing

Motorized vehicles could be utilized as needed for livestock management. There would be no impacts to livestock grazing under this alternative.

APPENDIX 17

SIERRA DE LAS CANAS WSA (NM-020-038)

I. GENERAL DESCRIPTION

A. Location

The Sierra de las Canas (Mountains of the Canes) Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 7 air miles east of the City of Socorro.

The following U.S. Geological Survey (USGS) topographic maps cover the WSA:

Bustos Well, New Mexico	7½-minute scale
Loma de las Canas, New Mexico	7½-minute scale
Carthage, New Mexico	15-minute scale
San Antonio, New Mexico	15-minute scale

B. Climate and Topography

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is a rugged desert mountain range characterized by sheer rock escarpments, deep narrow canyons, mountain ridges, and mesa tops, broken badlands, and isolated desert valleys. Elevations range from 5,100 to 6,200 feet with a maximum relief of 1,100 feet. Three large drainages are present within the WSA which trend northeast to southwest toward the Rio Grande.

C. Land Status

The WSA includes 12,838 acres of public land. A 160-acre private inholding is located within the area. The Sierra de las Canas WSA is located entirely within the White Sands Missile Range (WSMR) Safety Extension Area. (See Map 17-1 for land status within the WSA boundary.)

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

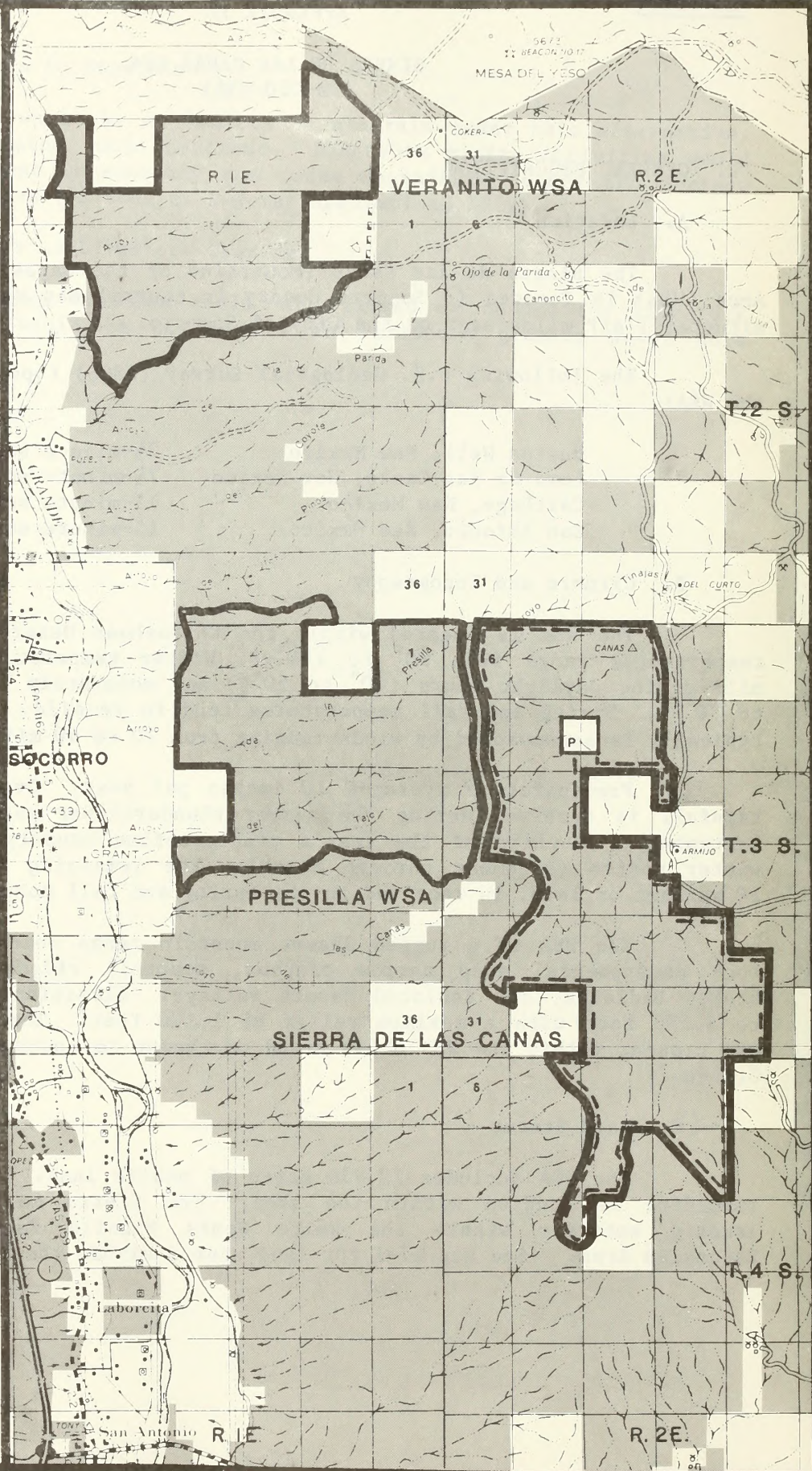
Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-1

MAP 17-1

MAP 20-1

LAND STATUS



D. Access

Primary legal access to the WSA is provided by Quebradas Road which parallels the west boundary of the WSA. This road is maintained by BLM and is suitable for use by two-wheel drive vehicles. There are no vehicle access routes within the WSA.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	Amended Boundary (Proposed Action)	No Action/No Wilderness
°Manage 12,838 acres as wilderness.	°Manage 12,798 acres as wilderness.	°Manage 12,838 acres without wilderness protection.
-No off-road vehicle use would be allowed.	-No off-road vehicle use would be allowed.	-No off-road vehicle use would be allowed.
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-12,838 acres would be closed to energy minerals leasing. The closed area includes 12,800 acres with moderate potential for geothermal resources.	-12,798 acres would be closed to energy minerals leasing. The closed area has moderate potential for geothermal resources.	-12,838 acres would remain open to energy minerals leasing and mining claim location.
-12,838 acres would be closed to mining claim location. The closed area includes 12,800 acres with moderate potential for copper, barite, fluorspar, lead, and zinc.	-12,798 acres would be closed to mining claim location. The closed area has moderate potential for copper, barite, fluorspar, lead, and zinc.	
-Attempts would be made to acquire 1,280 acres of State and private lands within and adjacent to the WSA.	-Attempts would be made to acquire 1,280 acres of State and private lands within and adjacent to the WSA.	-No special attempts would be made to acquire State and private lands.
-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.	-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.	-Access would be granted to WSMR personnel to recover missile debris which might impact in the area.
	°Manage 40 acres without wilderness protection.	
	-A new access route to private land would be allowed subject to protective stipulations.	

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (12,838 acres)	Wilderness protection would maintain the area's high quality naturalness, outstanding opportunities for solitude, and outstanding opportunities for hiking, backpacking, photography, deer hunting, and sightseeing. The area's special scenic features would also be maintained.
Amended Boundary (12,798 acres recommended suitable, 40 acres recommended nonsuitable) (Proposed Action)	Wilderness protection would maintain the area's high quality wilderness values. Motorized access to the private inholding would be allowed.
No Action/No Wilderness (12,838 acres)	Wilderness values would not receive long-term Congressional protection. The area would probably retain its naturalness, outstanding opportunities for solitude and primitive recreation in the short-term. Mineral exploration activities and mining claim assessment work could degrade wilderness values in the long-term.

II. EXISTING RESOURCES

A. Geology

The Sierra de las Canas WSA is located along the complexly faulted western margin of the Loma de las Canas uplift. This series of mountains, hills, and cuerdas forms the highlands between the Rio Grande rift to the west and the Jornada del Muerto Basin to the east. The Loma de las Canas uplift merges into the Joyita-Los Pinos uplift to the north and the San Pasqual platform to the south.

Rock units present in the WSA range in age from Pennsylvanian to mid-Tertiary. Pennsylvanian sediments of the Sandia and Madera formations crop out in the northern part of the WSA. They consist mainly of sandstones, shales, and limestones deposited in a shallow marine environment. The Permian age Abo, Yeso, and San Andres formations are present throughout the WSA. These rocks consist mainly of limestone, shale, sandstone, siltstone, and gypsum, and represent a change from terrestrial to lagoonal and shallow marine environments. The siltstone, shale, and sandstone of the Triassic age Dockum formation crop out in the eastern portion of the WSA. Volcanic rocks of the Tertiary age Datil formation also occur along the eastern margin of the WSA.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

There are no developed ground water sources within the WSA. Ground water may be present in the Permian age sandstone and limestone formations that occur in and adjacent to the WSA.

Ground water in Pueblito Well, which is located 2 miles west of the WSA, is considered as representative of the WSA. Analysis of ground water samples taken from this well indicates high dissolved solids due to mineralization but of suitable chemical quality for livestock purposes.

C. Soils

Approximately 75 percent of the soils within the WSA were developed from sandstone, limestone, or shale. These soils are typically very gravelly and shallow, and located on the upper and steeper slopes. Deep gravelly soils are present on lower slopes and in canyon bottoms.

Ten percent of the soils are gypsum influenced. There are small pockets of shallow soil over gypsum near the head of Arroyo del Tajo as well as small outcrops of rock gypsum on steep slopes throughout the WSA.

Fifteen percent of the WSA consists of deep and moderately deep loamy soils. They developed from loamy alluvial deposits and occur in small isolated areas within the WSA.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: desert shrub, pinyon-juniper, creosote, and wasteland.

The desert shrub vegetation type comprises approximately 10 percent of the surface area. The dominant plant species are creosote and black grama. Common shrub species are cholla, datil yucca, prickly pear, desert willow, ocotillo, honey mesquite, one-seed juniper, squawbush, winterfat, broom snakeweed, coldenia, and Mormon tea. Grasses are represented by spike dropseed, burrograss, ring muhly, sand muhly, gypgrass, fluffgrass, alkali sacaton, and galleta. Forbs include ironplant goldenweed, globemallow, and wild buckwheat.

The pinyon-juniper type is an important vegetation component of the WSA covering approximately 35 percent of the surface area. One-seed juniper and pinyon pine dominate; however, numerous plant species are represented in the community. The understory vegetation is dominated by warm-season grasses. The grama grasses are the most prevalent, sometimes constituting as much as 70 percent of the species composition of a vegetation site. Black grama has the highest composition followed by blue grama, sideoats grama, and hairy grama. Of lesser importance are various warm-season grasses, including purple muhly, galleta, Fendler threeawn, ring muhly, sand dropseed, and spike dropseed. Cool-season grasses include silver bluestem, Indian ricegrass, wolftail, bottlebrush squirreltail, and New Mexican feathergrass. Areas classified as pinyon-juniper that exist on soils with a high gypsum content are dominated by gypgrass. The shrub component of the pinyon-juniper community includes broom snakeweed, which in places comprises up to 30 percent of the composition. Other shrubs include datil yucca, mountain mahogany, feather peabush, Mormon tea, littleleaf sumac, squawbush, mariola, cholla, and prickly pear. Forbs present include ironplant goldenweed, Rocky Mountain zinnia, globemallow, hog potato, aster, and spectacle pod.

The creosote vegetation type comprises approximately 36 percent of the surface area. The dominant plant species are creosote, fluffgrass, bush muhly, and broom snakeweed. Other common shrub species include mesquite, mariola, and Mormon tea. Grasses are represented by black grama, galleta, and spike dropseed. Forbs include globemallow, desert holly, wild buckwheat, and pepperweed.

The WSA includes an area classified as wasteland. This area is characterized by extremely sparse vegetation cover which consists primarily of twisted and gnarled junipers, creosote, and widely scattered grasses. Wasteland constitutes approximately 19 percent of the WSA.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of four Federally-listed and ten State-listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Five Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. These SHS's support 238 wildlife species, which include 52 mammal species, 53 reptile and amphibian species, and 133 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file in the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Estimated deer densities for this portion of the WSA are four animals per square mile. Densities in the remainder of the WSA are one to two deer per square mile. Pronghorn are not abundant in the WSA.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Badgers have been sighted in the WSA. Common small mammals include desert cottontails, black-tailed jackrabbits, white-throated woodrats, deermice, and ground squirrels.

The near vertical rock escarpments, box canyons, and numerous exposed rock outcrops are particularly attractive to birds of prey. One golden eagle eyrie is known to be present within the WSA. Other birds which are commonly sighted include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and the western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The Fish and Wildlife Service furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. However, potential habitat exists for supporting migrating individuals because a sufficient prey base and water are available in the Rio Grande Valley. The biological assessment and related correspondence are on file in the Socorro Resource Area Office.

F. Visual

The WSA is dominated by near vertical, multicolored escarpments, twisted and convoluted badlands, narrow box canyons, and other topographic landforms which present considerable visual variety. Vistas of landscapes from high points within the WSA are impressive. The WSA is a desert mountain range with sparse vegetation cover; however, this characteristic accentuates the WSA's rugged starkness, visual immensity, and high solitude and natural values.

G. Cultural

Cultural sites in the WSA range from lithic scatters to at least one petroglyph site to several historic stone structures, one of which is reported to have served as a stage station. Eight sites are currently recorded within the boundaries of the WSA. In addition, over 100 cultural sites have been recorded within a 7-10 kilometer radius of the WSA, with the site types representing a diverse occupational continuum which dates to at least 4000 B.C. The probability for the occurrence of unrecorded sites within the WSA is considered high. However, the occurrence probability is lower than for lands adjacent to the Rio Grande Valley to the west.

H. Air

Generally, the quality of air within the Sierra de las Canas WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when winds, commonly gusting in excess of 30 mph, result in dust storms.

SIERRA DE LAS CANAS

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resources potential of the lands within the WSA is shown on Map 17-2 and Map 17-3. The locations of mining claims are shown on Map 17-4.

MINERAL RESOURCES POTENTIAL OF THE SIERRA DE LAS CANAS WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Paleozoic marine and marginal marine sedimentary rocks	Low	--
Geothermal	Active igneous intrusions along the Rio Grande rift	Moderate	12,800
Uranium	Vein deposits in Precambrian granites and stratabound deposits in Paleozoic sediments	Low	--
Nonenergy Minerals			
Copper ^{a/}	Stratabound deposits within Permian red bed sediments	Moderate	12,800
Barite, Fluorspar ^{a/} , Lead ^{a/} , Zinc ^{a/}	Vein and replacement deposits in Precambrian and Paleozoic rocks	Moderate	12,800
Gypsum	Permian evaporite sediments of the Yeso formation	Low	--
Limestone	Permian San Andres formation marine limestone	Low	--

Notes: *Acreage was not calculated for areas with low potential.

^{a/}Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

1. Energy Minerals

As of December 1, 1984, there were no mineral leases in the WSA.

a. Oil and Gas

Paleozoic rocks favorable for the accumulation of oil and gas are present within the WSA but intense faulting precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The WSA is located in the Socorro Peak Geothermal Leasing Area and is within 6 miles of a known shallow magma body. In addition, a warm spring is located on the western boundary of the WSA. For these reasons, the WSA is considered to have a moderate potential for the discovery of geothermal resources.

c. Uranium

Uranium is known to occur in Paleozoic limestones and may occur in late-Tertiary valley-fill sediments in the area surrounding the WSA. Paleozoic limestones crop out in the WSA but past prospecting has not disclosed any uranium occurrences and late-Tertiary sediments do not crop out in the WSA. The WSA is considered to have low potential for the discovery of uranium deposits.

2. Nonenergy Minerals

As of September 17, 1984, there were 10 post-Federal Land Policy and Management Act (FLPMA) mining claims recorded with BLM in the WSA.

a. Copper

Copper deposits in Permian red beds are known to occur in a belt extending from Scholle to Carthage passing through the WSA. Some of the deposits were mined in the past but have been uneconomic in recent years. The red beds crop out extensively in the WSA and are considered to have a moderate potential for the occurrence of copper mineralization.

b. Gypsum

The Permian age Yeso formation, which contains gypsum, is found throughout the WSA. The deposits are considered to have a low potential for use because of lack of local demand and the availability of more pure deposits in other parts of central New Mexico.

c. Barite, Fluorspar, Lead, Zinc

Deposits of these minerals are known to occur along faults within Precambrian rocks and within the Madera limestone in the area surrounding the WSA. Several occurrences of barite, fluorspar, lead, and zinc are within a mile of the WSA boundary. The WSA has faulted outcrops of Madera limestone and is considered to be moderately favorable for the occurrence of such deposits.

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-2

MAP 17-2

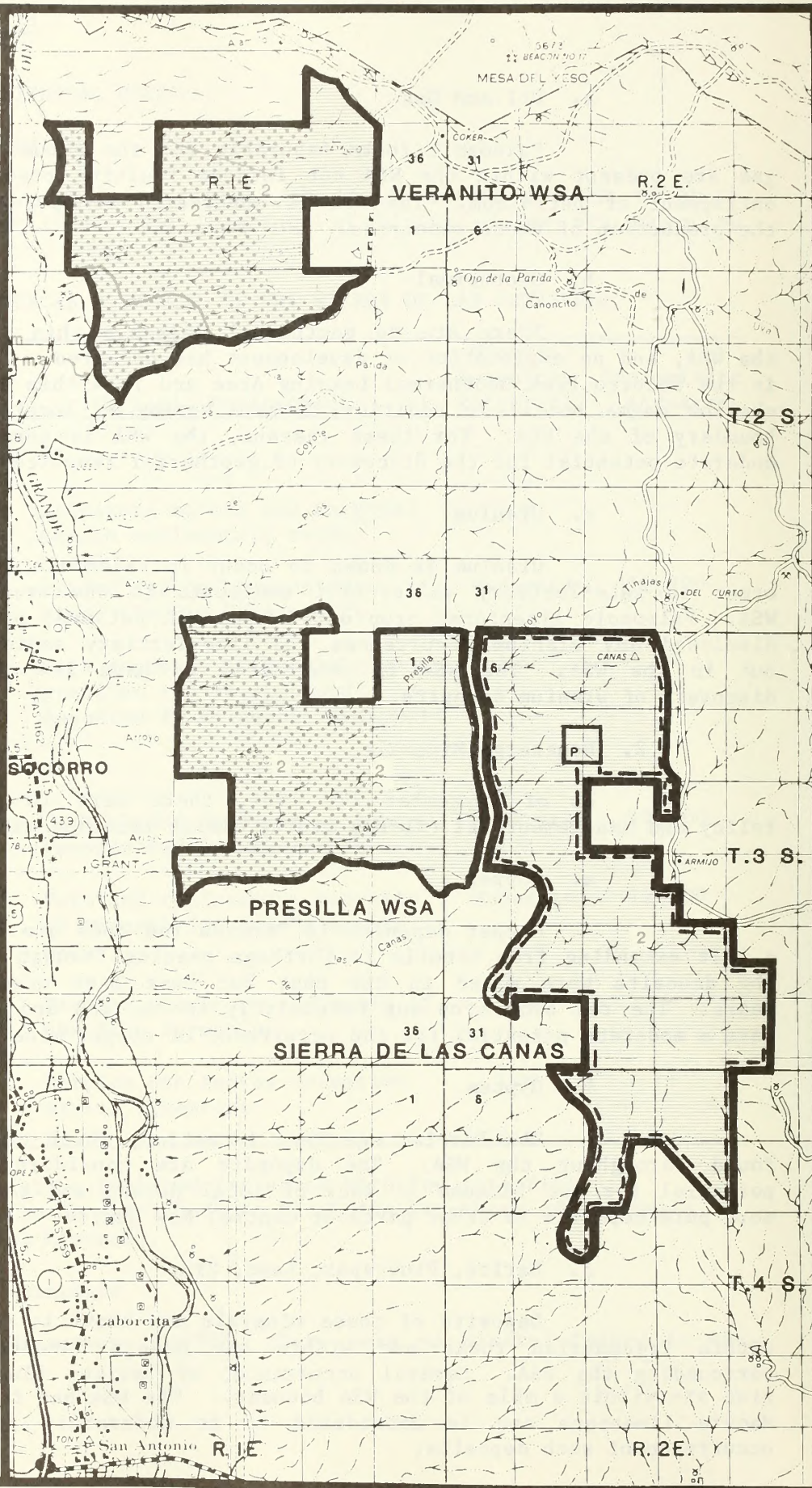
MAP 20-2

ENERGY MINERAL
RESOURCE POTENTIAL*

Geothermal

Uranium

*Areas of high (1) and
moderate (2) mineral
potential are shown for
lands within the WSA; the
potential may extend outside
the WSA boundary. Areas of
low potential are not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-3

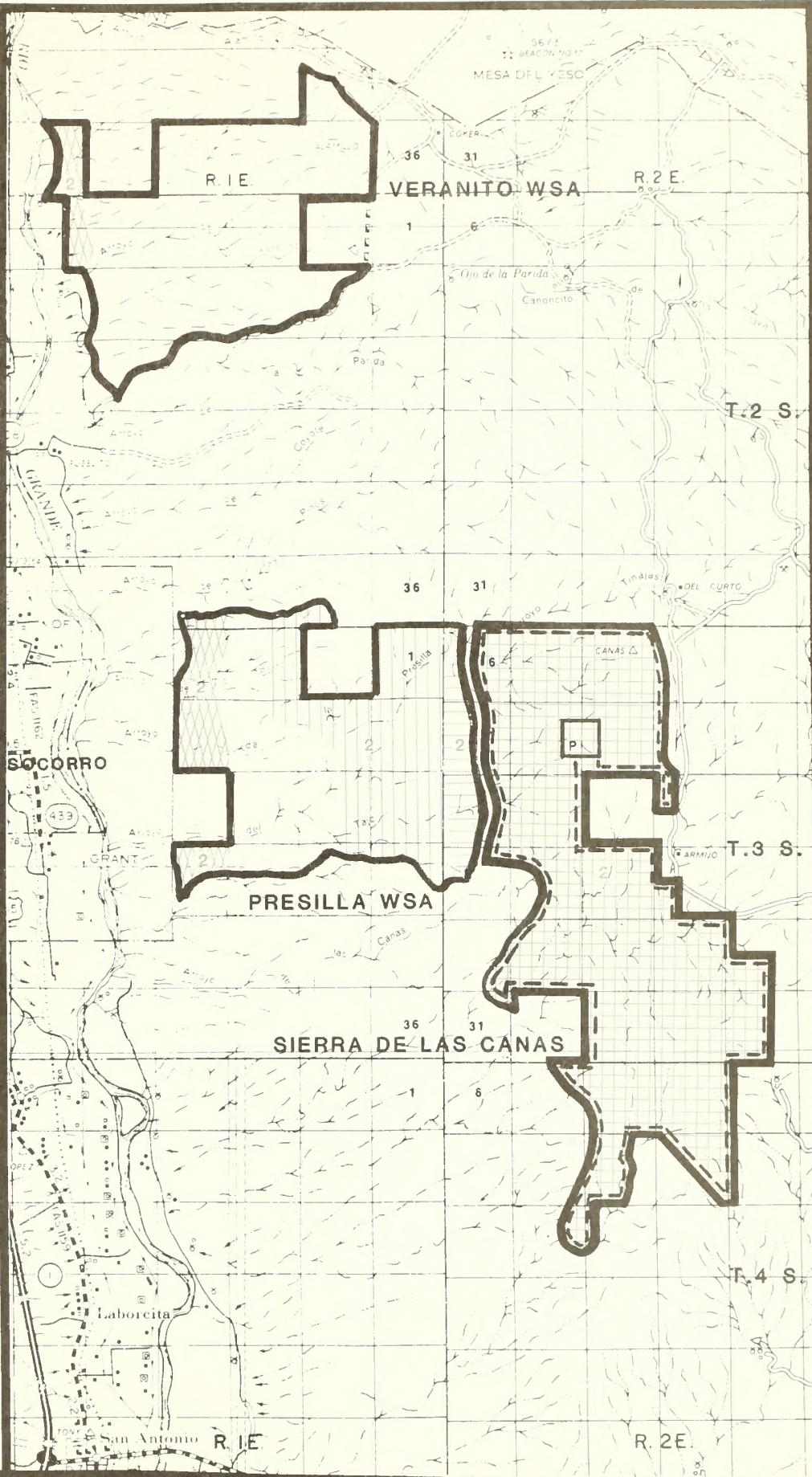
MAP 17-3

MAP 20-3

NONENERGY MINERAL
RESOURCE POTENTIAL*

- Fluorspar, Barite
Lead, Zinc,
- Copper
- Sand and Gravel

*Areas of moderate (2)
mineral potential are shown
for lands within the WSA;
the potential may extend
outside the WSA boundary.
Areas of low potential are
not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 17-4

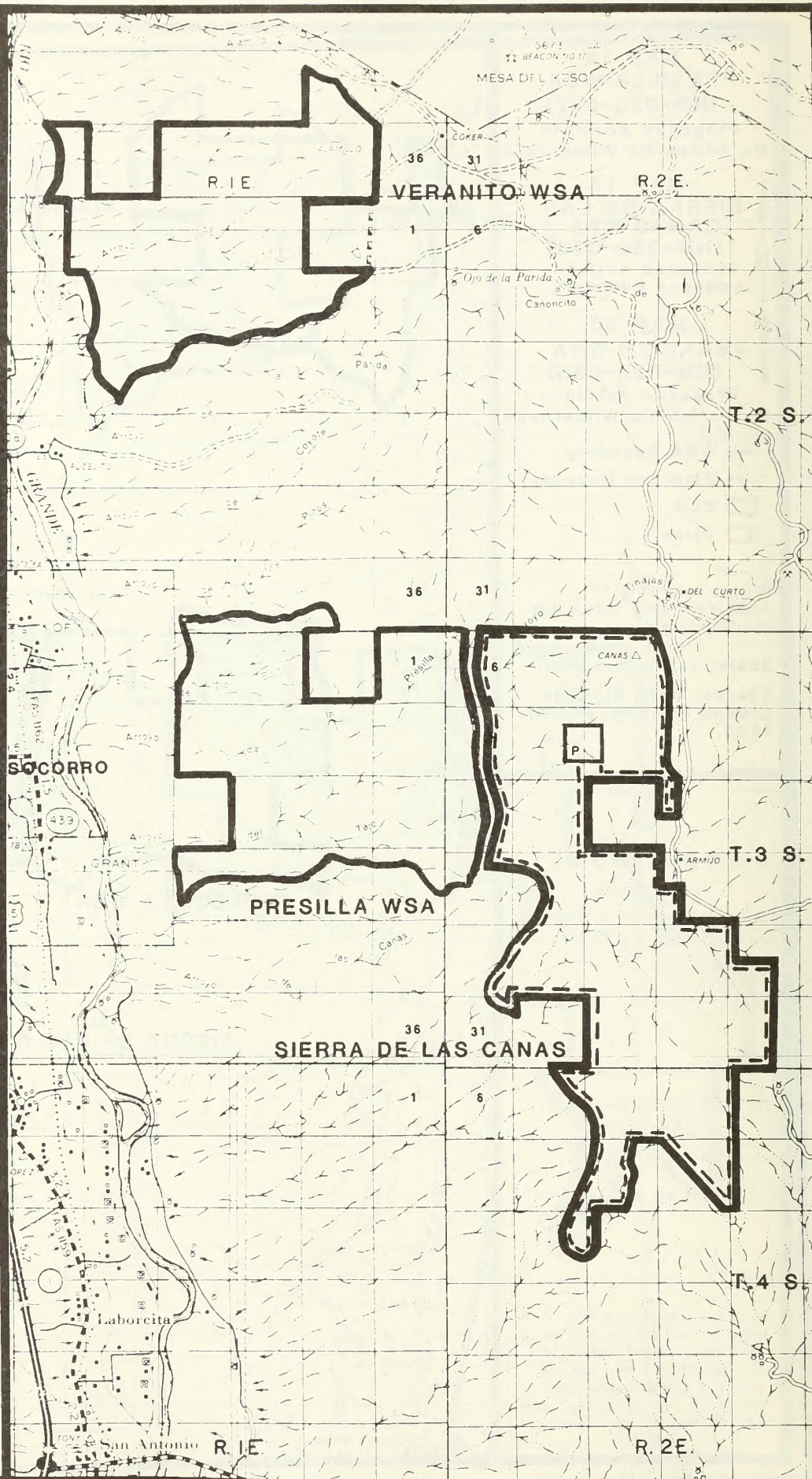
**MINING CLAIMS AND
MINERAL LEASES***

- Pre-FLPMA Mining
Claims per Section
- Post-FLPMA Mining
Claims per Section

FLPMA was passed October 21,
1976.

(Claim information from BLM
records dated September 17,
1984; claims which overlap
more than one section are
counted in each section in
which they occur.)

*No mineral leases exist in
the WSA as of BLM records
dated December 1, 1984.



d. Limestone

The WSA is partly underlain by the San Andres limestone which may be of such purity to be used as agricultural lime or in the manufacture of cement. These deposits would have a moderate favorability for development if local demand for the material occurs. However, because there has been no interest in the area, the potential is considered low.

B. Watershed

The majority of the WSA is located within the Canas Watershed with about 5 percent in the Parida Watershed. The WSA is largely a rough, rocky desert shrub terrain typical of the Rio Grande breaks. Soils are coarse textured, gravelly and range from deep to shallow over bedrock. Most soils have a desert pavement surface. Geologic erosion by wind and water is most active in arroyo channels and alluvial fans. Approximately 25 percent of the WSA falls within the critical erosion class and 75 percent in the moderate erosion class. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of five grazing allotments lie within the Sierra de las Canas WSA. All five allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Armijo Community	5,617	667	3,880	69%
Blackington Mountain	16,656	2,160	5,488	39%
Silver Road	14,744	1,607	120	0%
La Arenosa	9,682	852	170	2%
Las Canas	12,312	1,560	3,180	25%
TOTAL			12,838	

2. Ranch Management

Maintenance has been performed almost exclusively on horseback in the past. This practice would continue as needed.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Armijo Community	5 3/4 miles of fence
Blackington Mountain	7 1/10 miles of fence
La Arenosa	1 2/5 miles of fence
Las Canas	4 1/2 miles of fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned for the WSA at this time.

D. Recreation

The WSA is located within 45 minutes driving time of Socorro and is visible from the community and much of the Middle Rio Grande Valley. Existing recreational use of the WSA is low. However, the recreational use of the WSA is expected to increase in coming years due to its proximity to the Middle Rio Grande Valley, ease of access, and its high natural values.

The Sierra de las Canas WSA is within the Stallion Planning Area. In this Planning Area, ORV use is limited to designated roads and trails.

E. Education/Research

The WSA is not currently being utilized for any known educational or research purpose. The WSA may have education and research potential for paleontological, cultural, wildlife, and natural ecosystem studies.

F. Wildlife

No specific actions are planned for the WSA at present. The WSA has not been identified by the New Mexico Department of Game and Fish for reintroduction of any species.

G. Other--White Sands Missile Range (WSMR) Safety Extension Area

The WSA is within the WSMR Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper. In addition, WSMR has stated that it may be desirable to locate temporary tracking equipment in the WSA because of its elevation and view of the entire safety area.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the Sierra de las Canas WSA are minimal. Intrusions consist of approximately 19 miles of barbed wire fence. There are no vehicle routes, stock tanks, or other intrusions in the area.

Unauthorized assessment work, consisting of bulldozing approximately one acre of land, was performed on a mining claim within the WSA. The trespass occurred on the periphery of the WSA. It is believed that the area could be reclaimed so that the disturbance would be substantially unnoticeable in a few years.

The WSA is not only virtually free of obvious human impacts, it also represents one of New Mexico's least disturbed upper Chihuahuan Desert ecosystems. Although grazing use within the area has occurred over the past century, the absence of water combined with rugged topography has resulted in the WSA being subjected to only light grazing pressure by livestock.

b. Solitude

The WSA is a topographically serrated desert mountain range characterized by near vertical escarpments, steep slopes, and rugged canyons. The flanks of the mountains include broken badlands, arroyos, and desert. The topographic diversity coupled with the severity of much of the WSA's landforms ensure outstanding solitude opportunities of the highest quality.

c. Primitive and Unconfined Recreation

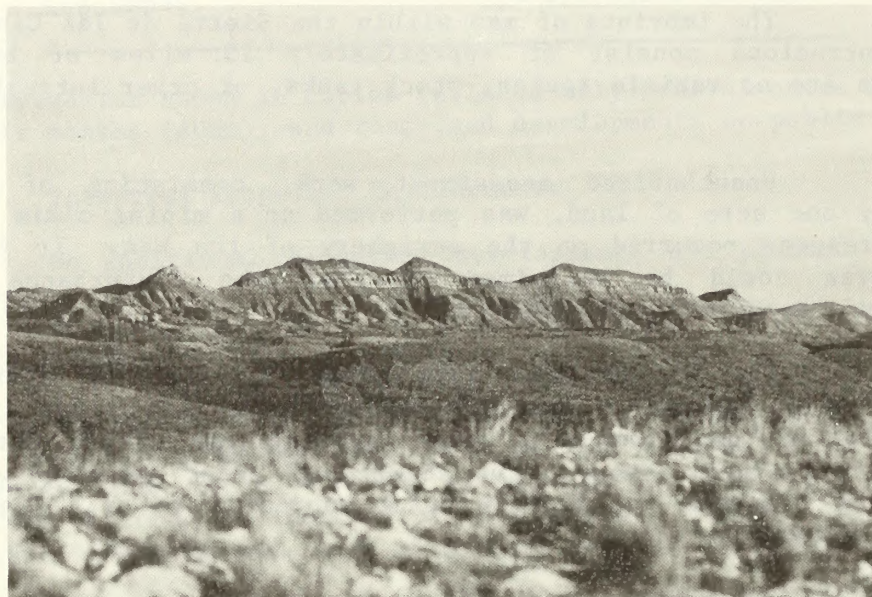
This rugged desert mountain environment, with its colorful escarpments, canyons, and vistas, provides an outstanding setting for day hiking, backpacking, photography, deer hunting, and various types of sightseeing. The area is most attractive for these recreational uses during the cooler months.

The area's outstanding recreational opportunities are further enhanced by the area's proximity to Socorro and Interstate 25 and the well maintained road which provides access to the western edge of the WSA.

2. Special Features

The WSA represents a fine example of the scenic value of a low elevation desert mountain range. The value of the area's scenic qualities

is enhanced by its location. Rising above the eastern breaks of the Rio Grande Valley, the WSA is an important part of the visual landscape of the community of Socorro and for travelers along Interstate 25 and U.S. Highway 60. Especially appealing is the scenic quality of the WSA's broken and convoluted western escarpment, which during the late daylight hours, reflects variegated colors tinged with red.



Western Face of Sierra de las Canas.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Congressional designation of this area as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Sierra de las Canas WSA lies near the northern extreme of the Chihuahuan Desert Province and close to the southern edge of the Colorado Plateau Province as identified in the Bailey (1976) - Kuchler (1966) Classification System.

Potential natural vegetation consists of 4,488 acres of juniper-pinyon woodland in the Colorado Plateau Province and 8,350 acres of grama-tobosa shrubsteppe in the Chihuahuan Desert Province. However, because of the WSA's geographic position between the Chihuahuan Desert and the Colorado Plateau Provinces, these areas are not clearly distinctive. Instead, they tend to intergrade into one another to varying degrees.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico, lies within 2 hours, Las Cruces, New Mexico, is within 3½ hours, and El Paso, Texas, within 4½ hours driving time of the WSA.

B. Manageability

The Sierra de las Canas WSA could be managed to preserve the wilderness values which presently exist in the WSA. Manageability is a judgment made by the BLM after considering factors such as private inholdings, valid existing rights, topography, and the overall land ownership pattern.

Grandfathered livestock operations in the WSA are compatible with wilderness management, and required access for maintenance of existing fences is not expected to create problems for wilderness management.

Ten post-FLPMA mining claims are located in the east-central portion of the WSA. The impact these claims may have on wilderness management is difficult to predict at this time. Other than unauthorized assessment work performed on one claim, no mining activity of consequence has occurred in the WSA. If the area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) would apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in an area prior to its designation as wilderness may develop their claims in accordance with 43 Code of Federal Regulations (CFR) 3809, "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. Although exploration could occur on these claims after wilderness designation if the claims are valid, this appears unlikely because of the moderate mineral potential.

The Sierra de las Canas WSA lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Extension Area must be evacuated of all human inhabitants during missile firings. The Extension Area is necessary for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Extension Area to recover missile debris. However, no known impacts of this nature have occurred within the WSA to date.

A designated wilderness within the WSMR Safety Extension Area would require special management consideration to meet the military's needs while preserving wilderness values and ensuring human safety. Access to recover missile debris could be granted after determining the method which would least impact wilderness values. However, this is not expected to

produce significant problems because of the low probability of a missile impacting in the area.

WSMR has also stated that it may be desirable to locate temporary tracking equipment in the WSA because of its elevation and view of the entire safety area. The BLM will cooperate with WSMR to locate other suitable sites with similar characteristics outside the WSA. Based on a preliminary review of public land patterns and the topography of the region, it is anticipated that other suitable sites would be available.

The wilderness management potential of the WSA in terms of effectively precluding vehicular access to the area is excellent. The WSA is bounded on the west by a BLM road from which off-road vehicle (ORV) access is prevented by topographic features in all but a few locales. Vehicle use can be easily precluded through management actions in these locations. The northern boundary of the WSA lies on a legal subdivision but this part of the WSA is roadless and topographically rugged. The southern and eastern portions of the WSA can be accessed by four-wheel drive vehicles in several large arroyo bottoms. However, management actions could effectively close these entry points.

A single 160-acre private inholding which includes a perennial spring is located in the WSA. Should the landowner desire to construct a vehicle access route into his property and develop the spring site, the presence of this inholding within a designated wilderness would pose significant manageability problems. The acquisition by the BLM of the 160-acre private inholding through voluntary exchange would enhance the manageability of the WSA and also assist in maintaining the area's ecosystem and wildlife values. At this time, however, the acquisition of the inholding is unlikely because of the owner's opposition.

Other actions to enhance manageability of the WSA would be the future acquisition, through voluntary exchange, of approximately 1,120 acres of State land which lie adjacent to the WSA. Lands recommended for acquisition are legally described below.

Lands Recommended for Acquisition

<u>Legal Description</u>	<u>Acres</u>
State Land	
T. 3 S., R. 2 E., Section 16, All	640
Section 32 (that portion east of the	
Quebrados Road)	480
TOTAL	<u>1,120</u>
Private Land	
T. 3 S., R. 2 E., Section 8, SE $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$	80
Section 9, SW $\frac{1}{4}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$	80
TOTAL	<u>160</u>

In addition, a high potential exists for expanding the WSA northward if checkerboarded public land could be consolidated through the acquisition of State and private lands in future years.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has, with few exceptions, indicated support for designation of the Sierra de las Canas WSA as a wilderness area. Reasons cited have included the area's high naturalness values, outstanding solitude and recreation values, its proximity to Socorro and the Rio Grande Valley, and high scenic, wildlife, and ecological values. The lack of resource conflicts coupled with the area's manageability as wilderness were also mentioned as reasons for designating the area. A number of public comments urged the BLM to acquire the 160-acre private inholding within the WSA due to its important ecological and wildlife values.

Opposition to wilderness designation came from area permittees. Following adjustments to the WSA boundary, all but one permittee appeared satisfied that designation of the involved lands would not significantly hamper or interfere with their respective ranch operations.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Sierra de las Canas WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 26 letters were received. Four respondents were opposed to wilderness designation because: the WSA has a moderate favorability for geothermal resources, copper, barite, fluorite, lead, and zinc, and untested oil and gas potential; designation will simply attract increased public pressure on the area without compensating benefits; the area is unmanageable and of little value as wilderness; designation would impose hardship and cause difficulty in ranch operations; and WSMR will be restricted in its access and support needs.

Twenty-two respondents supported wilderness designation for the Sierra de las Canas WSA. Reasons for this support centered around the area's wilderness values and minimal resource conflicts. It was also stated that the area's value as wilderness is enhanced by its scenic values, cultural sites, proximity to Socorro, and that it is an excellent example of an upper Chihuahuan Desert ecosystem.

There was also support for enhancing the area's wilderness values through the acquisition of the only private inholding in the WSA which also contains a perennial spring.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise

discussed in the table, issues related to water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, and WSMR Safety Extension Area are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
Amended Boundary (Proposed Action)	Improved manageability, eliminated conflict with private inholding.
No Action/ No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for this WSA are the quality of the area's wilderness values and mineral potential. No significant impacts to geothermal resources or the locatable nonenergy minerals; copper, barite, fluorspar, lead, and zinc were identified. However, these resources are analyzed because of the WSA's moderate potential for these minerals and because mineral potential is a Statewide issue.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 12,838 acres of public land within the Sierra de las Canas WSA would be recommended suitable for wilderness designation. (See Map 17-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and management would maintain the area's high quality naturalness, outstanding opportunities for solitude, outstanding opportunities for hiking, backpacking, photography, deer hunting, and sightseeing, and scenic resources.

2. Impacts to Geothermal Resources and Nonenergy Locatable Minerals

Despite moderate potential for geothermal resources on 12,800 acres in the Sierra de las Canas WSA, there has been no exploration or drilling in the area. It is assumed that after wilderness designation, no new leases would be issued. If a discovery were made in an area adjacent to the WSA, geothermal resources would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the geothermal potential in the WSA. However, the impacts of wilderness designation on geothermal resources would not be significant because the Sierra de las Canas WSA is only a small part of a surrounding extensive area of equal geothermal potential. Areas closer to the community of Socorro would prove much more valuable for geothermal exploration and development.

Although 12,800 acres in the Sierra de las Canas WSA have moderate potential for copper, barite, fluorspar, lead, and zinc, only 10 mining claims are presently located in the area. It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Sierra de las Canas WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims

would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for nonenergy locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full potential of the area could not be assessed. However, the impacts on exploration and development of copper, barite, fluorspar, lead, and zinc deposits in the WSA would not be significant because current information indicates that most deposits of the type expected in the Sierra de las Canas WSA tend to be small and uneconomical to mine.

3. Impacts to Livestock Grazing

Domestic livestock grazing is a permissible and compatible use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM.

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels. Existing fences would not be removed so long as they are necessary to ranch operations. Virtually all ranch management activities occurring within the WSA are currently conducted on horseback. If the area is designated wilderness, ranching operations would continue, with few exceptions, much as they have in the past.

B. Amended Boundary (Proposed Action)

Under the Amended Boundary Alternative, 12,798 acres would be recommended suitable and 40 acres would be recommended unsuitable for wilderness designation. The 40-acre deletion would provide an access corridor into a 160-acre private tract and spring. This would allow the private landowner to construct a vehicle access route into his property and develop the spring site.

Under this alternative, like the All Wilderness Alternative, existing vehicle routes and legal subdivision lines are utilized to identify the boundaries of the proposed wilderness.

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for 12,798 acres of the WSA. This would result in significant

long-term maintenance of the high quality wilderness values and scenic resources.

The remaining 40 acres would not receive long-term Congressional protection. An access road to the 160-acre private inholding could be constructed across this 40 acres. This would reduce the naturalness and opportunities for solitude and primitive recreation available on these 40 acres.

2. Impacts to Geothermal Resources and Nonenergy Locatable Minerals

The impacts to these resources would be the same as those described under the All Wilderness Alternative.

3. Impacts to Livestock Grazing

Impacts to livestock grazing would be the same as those described under the All Wilderness Alternative.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 12,838 acres of public land within the Sierra de las Canas WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing, mineral exploration, and other traditional uses.

1. Impacts to Wilderness Values

The wilderness values of the Sierra de las Canas WSA would not receive long-term Congressional protection. Although the WSA would probably retain its wilderness values in the short-term, management of the area as specified in existing land use plans would be subject to administrative change in the long-term. Under this alternative, there could be long-term reduction of the area's wilderness values, especially naturalness and scenic qualities as a result of mineral exploration activities.

2. Impacts to Geothermal Resources and Nonenergy Locatable Minerals

There would be no impacts on geothermal resources or nonenergy locatable minerals under this alternative. Geothermal leasing would continue. The area would be open to mining claim location. Locatable mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 CFR 3809).

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

APPENDIX 18

SIERRA LADRONES WSA (NM-020-016)

I. GENERAL DESCRIPTION

A. Location

The Sierra Ladrones (Mountain of Thieves) Wilderness Study Area (WSA) is located in Socorro County in west-central New Mexico. The WSA is situated 15 air miles northwest of the community of Socorro.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Riley, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The climate of the WSA is characteristic of southwestern desert mountains. Considerable variation in temperature and precipitation is present within the WSA. Maximum summer temperatures in the lower elevations surrounding the mountain peaks range from 90° to 100+°F. In contrast, temperatures in the higher elevations typically are 10° to 15° cooler, ranging from 75° to 90°F. Winter daytime temperatures tend to be mild on low elevation lands, 35° to 50°F. In the higher elevations, diurnal temperatures range from 20° to 40°F with nighttime lows atop the peaks often falling well below zero. Spring and fall temperatures tend to be mild.

Precipitation, like air temperature, is strongly influenced by elevation. Generally, average annual precipitation increases along with elevation increases. Because of the cloud gathering effect of the mountains, low elevation lands surrounding the WSA tend to receive more precipitation than nearby lands of similar elevation; 12 inches per year as opposed to 10 inches. Correspondingly, the highest elevations in the WSA receive a projected average of 16 to 20 inches of precipitation per year.

Over half the area's annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The Sierra Ladrones WSA rises precipitously out of the Rio Grande Valley on the east and from mesa grassland and pinyon-juniper woodland on the north, west, and south. Elevations range from 5,200 feet to 9,176 feet with a maximum relief of 3,976 feet.

The WSA is 14 miles long from north to south and 8 miles wide east to west. The core peaks of the range are extremely rugged. The northern end of the WSA terminates with abrupt escarpments which give way to several large canyons. The southern end of the WSA gradually loses altitude from the main peaks with a long narrow ridge eventually tapering down to box

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canyons and arroyos along the Rio Salado. On the east, the mountains break into a series of rocky canyons which give this exposure the appearance of an enormous pile of boulders. The western and southern portions of the WSA are characterized by rocky cliffs, mesa rimrock, badlands, and steep slopes cut by numerous box canyons and ravines.

C. Land Status

The Socorro District Wilderness Draft Environmental Assessment (DEA) (BLM 1983) identified the WSA as having 39,308 acres of public land, 1,960 acres of State inholdings, and 373 acres of private inholdings. These acreage figures were based on the decisions contained in the New Mexico Study Area Decisions (BLM 1980). These decisions were contested and appealed to the Interior Board of Land Appeals (IBLA). The IBLA recently completed their review of appeals of the November 1980 decisions. The IBLA reversed BLM's decision to delete approximately 6,228 acres south of the Rio Salado from the WSA and directed BLM to add this acreage to the designated WSA.

During the reinventory, the BLM determined that the additional 6,228 acres were divided into two parcels by the Carbon Springs Road.

The east parcel is made up of 3,240 acres of public land, 800 acres of private land, and 219 acres of split estate. This parcel is contiguous with the original WSA.

The west parcel is made up of 2,008 acres of public land, 40 acres of private land, and 761 acres of split estate.

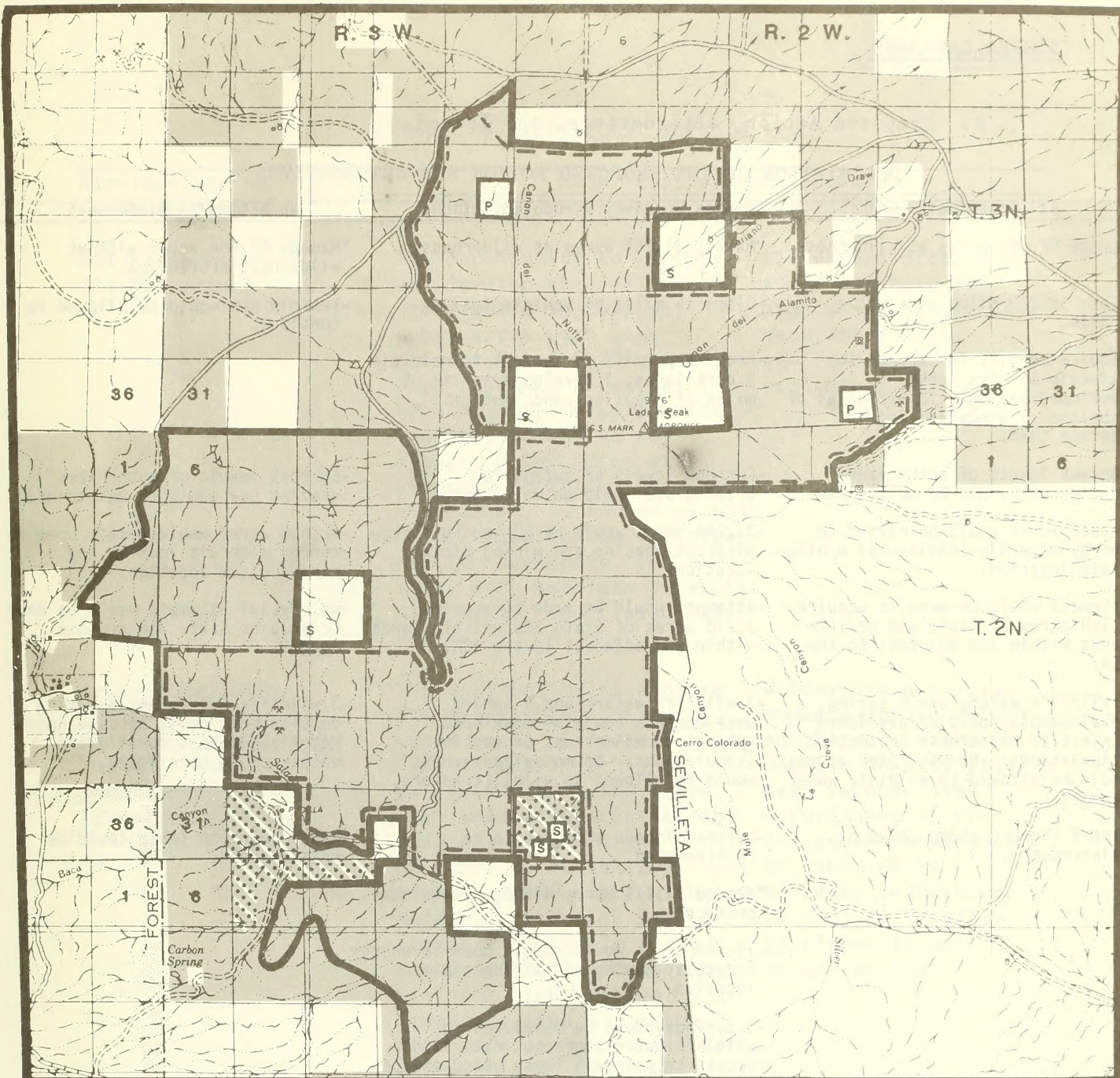
Because of the location of the split estate lands in the west parcel, only the 140 acres in T. 2 N., R. 3 W., Section 29, that are southwest of the Rio Salado are contiguous with the original WSA.

The WSA now contains the original WSA acreage, the public land contained in the east parcel, and the 140 acres in T. 2 N., R. 3 W., Section 29, that is southwest of the Rio Salado.

The total WSA now includes 42,688 acres of public land, 373 acres of private inholdings, and 1,960 acres of State inholdings. (See Map 18-1 for land status within the WSA.)

D. Access

Primary legal access to the WSA is provided by Interstate 25 at Bernardo and then west via County Road 12. Legal access is also provided by U.S. Highway 60 at Magdalena and then north via County Road 67.



SIERRA LADRONES WSA (NM-020-016)

MAP 18-1 LAND STATUS

- WSA Boundary
- - - Amended Boundary (Proposed Action)
- [Light Gray Box] BLM
- [White Box with 'P'] Private
- [White Box with 'S'] State

State and private ownership is identified only inside the WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

- [Light Gray Box] BLM Surface/Non BLM Subsurface
- [Dotted Box] Lands Removed from WSA Status after Reinventory

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E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

----- All Wilderness -----	----- Amended Boundary (Proposed Action) -----	----- No Action/No Wilderness -----
°Manage 42,688 acres as wilderness.	°Manage 31,244 acres as wilderness.	°Manage 42,688 acres without wilderness protection.
-Close 35 2/5 miles of vehicle trails.	-Close 15 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for access to maintain 14 dirt tanks, 3 developed springs, 12 1/2 miles of pipeline, 1 windmill, and 1 storage tank.	-Require permits for access to maintain 5 dirt tanks, 1 developed spring, 5 miles of pipeline, and 1 windmill.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-42,688 acres would be closed to energy minerals leasing and mining claim location.	-31,244 acres would be closed to energy minerals leasing and mining claim location.	-42,688 acres would remain open to energy minerals leasing and mining claim location.
-Attempts would be made to acquire 4,350 acres of State and private lands within and adjacent to the WSA.	-Attempts would be made to acquire 3,710 acres of State and private lands within and adjacent to the WSA.	-No special attempts would be made to acquire State and private lands.
-3 wildlife waters and 8 spring developments could be developed subject to wilderness protection stipulations. No motorized access would be allowed to wildlife water sources.	-3 wildlife waters and 5 spring developments could be developed subject to wilderness protection stipulations. No motorized access would be allowed to wildlife waters.	-3 wildlife waters and 8 spring developments could be developed. Motorized access to wildlife waters could be allowed.
-Desert bighorn sheep could be reintroduced.	-Desert bighorn sheep could be reintroduced. °Manage 11,444 acres without wilderness protection. -11,444 acres would remain open to energy minerals leasing and mining claim location. -3 springs could be developed for wildlife water sources. Motorized access to maintain these water sources could be allowed. -Access would not be limited to 7 1/2 miles of pipeline, 9 dirt tanks, 2 developed springs, and 1 water storage tank. -Vehicle use would be allowed to continue on 20 miles of vehicle trails. -Current levels of authorized grazing use would be maintained.	-Desert bighorn sheep could be reintroduced.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues	
	Mineral Resources	Wilderness Values
All Wilderness (42,688 acres)	The opportunity to explore and develop the following areas would be forgone: 1,800 acres with high potential and 8,200 acres with moderate potential for uranium, 10,000 acres with moderate potential for copper, 8,100 acres with moderate potential for cobalt and nickel, 10,800 acres with moderate potential for high-calcium limestone, and 600 acres with moderate potential for silver, lead, zinc, and barite.	Wilderness protection would maintain the area's existing wilderness and scenic, geological, and ecological values.
Amended Boundary (31,244 acres recommended suitable, 11,444 acres recommended nonsuitable (Proposed Action))	The opportunity to explore and develop the following areas would be forgone: 1,800 acres with high potential and 8,200 acres with moderate potential for uranium, 10,000 acres with moderate potential for copper, 8,100 acres with moderate potential for cobalt and nickel, 5,700 acres with moderate potential for high-calcium limestone, and 600 acres with moderate potential for silver, lead, zinc, and barite.	Wilderness protection would maintain values in the area with the highest quality wilderness values. The naturalness of the designated area would be enhanced by boundary adjustments to exclude rangeland developments and access routes.
No Action/No Wilderness (42,688 acres)	No significant impacts.	Naturalness could be reduced in the long-term by mineral exploration and development, additional rangeland developments, and continued vehicular access.

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II. EXISTING RESOURCES

A. Geology

The Sierra Ladrone WSA lies across a zone of transition between the northwestern flank of the Rio Grande rift and the southeastern margin of the Colorado Plateau. The Ladrone Mountains appear to represent a resistant prong of the Colorado Plateau block that juts into the western side of the rift. The WSA is also located on the northeastern periphery of the Datil-Mogollon volcanic field.

Structural features present within the WSA include anticlines, synclines, and numerous faults, flexure, and shear zones. Major faults include the north-trending Jeter, Silver Creek, and La Jencia Creek "domino faults" in the eastern part of the WSA, the north-trending Ladrone fault which runs through the central part of the WSA, and the northeast-trending Cerro Colorado fault zone which intersects the southeast tip of the WSA. Other major structures are the Rio Salado flexure zone which trends northwest through the southern part of the WSA, the Carbon Springs flexure which trends north-south through the western part of the WSA, and the Alamito shear zone trending northeast through the northern part of the WSA.

Rocks exposed in the WSA range in age from Precambrian to Quaternary. Precambrian rocks consist of 1.6-billion-year-old metamorphosed sediments, meta-volcanics, and granites, which are intruded by the 1.3-billion-year-old Ladrone pluton. Paleozoic formations include Pennsylvanian-Mississippian rocks, the Permian Abo and Glorieta sandstone, and the San Andres limestone. The Mesozoic era is represented by Triassic and Cretaceous rocks. Cenozoic rocks include the Tertiary Baca, Datil-Mogollon and Popotosa formations, basaltic dikes and sills, and the Quaternary Sierra Ladrone formation, travertine deposits, and surficial deposits.

The Caloso member of the Kelly limestone, found along a prominent hogback on the western side of the WSA, contains fossils of the Kinderhook fauna. Two brachiopods, Dielasma chouteauvensis and Spirifer centronatus, which are common in the Caloso member, are not found elsewhere in New Mexico. The Ladrone member, which overlies the Caloso, contains an abundance of corals, brachiopods, and echinoderms. Further discussion of the significance of these fossil beds can be found in Chapter IV, Special Features.

B. Water

The WSA lies within the Rio Grande Basin. The WSA is drained by a radial pattern of intermittent streams tributary to the Rio Puerco on the north and the Rio Salado on the south. The Rio Puerco and Rio Salado are important tributaries of the Rio Grande. Each have extensive watersheds but are dry during much of the year. During periods of significant rainfall or snow melt, the Rio Puerco and Rio Salado are subject to flooding and carry large quantities of sediment. Runoff averages 0.1-0.5 inches per year.

Formations underlying the WSA known to yield ground water include Precambrian age rocks, Pennsylvanian age Madera limestone, Permian age Abo and Yeso formations, Tertiary age Popotosa and Santa Fe formations, and Quaternary age alluvium.

C. Soils

Development of typical soil horizons is seldom found within the WSA. Soils are usually thin and rocky, with gravelly loams and sandy loams underlain by granite bedrock. The only areas with appreciable soil depth occur in the lower canyon bottoms, valleys, portions of the mesa benchland on the west, and along the Rio Salado. Rock outcrops, some of which are massive, cover approximately 40 percent of the land surface of the mountain core area. Soil parent materials are composed predominantly of sandstone, shale, granite, basalt, and limestone. Gypsum is present in the southwestern portion of the WSA.

D. Vegetation

1. General

The Sierra Ladrones WSA includes four major vegetation types: pinyon-juniper, desert shrub, conifer, and bosque.

The pinyon-juniper type covers approximately 89 percent of the WSA. The overstory is dominated by one-seed juniper and pinyon pine. The percent composition of juniper and pinyon in this vegetation type varies from less than 1 percent in the relatively flat areas to the north and west to more than 15 percent on the steep slopes in the center of the WSA. Gambel oak may also be found in the overstory on the steep slopes in the center of the WSA.

In the relatively flat areas at lower elevations, the understory of the pinyon-juniper type is comprised of numerous warm-season grasses, shrubs, and half-shrubs, and a few perennial forbs. The average percent composition of grasses in these areas is 84 percent. The most common grasses are black and blue grama, sand and spike dropseed, alkali sacaton, galleta, ring muhly, burrograss, fluffgrass, and threeawn. The most dominant shrub or half-shrub in these areas, and probably in the entire WSA, is broom snakeweed. Other shrubs and half-shrubs include creosote, fourwing saltbush, feather peabush, cholla, and prickly pear. Some of the perennial forbs present in the understory are prickly-leaf dogweed, ironplant goldenweed, plains blackfoot, plains zinnia, and aster.

On the steep slopes at higher elevations, the understory of the pinyon-juniper type is comprised of warm- and cool-season grasses. There are also more shrubs and half-shrubs in the understory at the higher elevations. The average percent composition of grasses is only 72 percent in these areas. The warm-season grasses include black and blue grama, sideoats grama, hairy grama, sand dropseed, and galleta. The cool-season grasses include Arizona fescue, mountain brome, mutton bluegrass, Junegrass, wolftail, bottlebrush squirreltail, and needlegrass. Shrubs and half-shrubs

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present at the higher elevations are broom snakeweed, feather peabush, cholla, prickly pear, datil yucca, shrub live oak, hairy mountain mahogany, skunkbush sumac, Apacheplume, and beargrass. Few perennial forbs are found in the understory of the pinyon-juniper type at the higher elevations.

The desert shrub type covers less than 5 percent of the WSA, and is located in the extreme northern end of the area. The overstory is dominated by cholla. The understory is dominated by perennial grasses such as black and blue grama, sand and spike dropseed, galleta, ring muhly, burrograss, fluffgrass, and threeawn. The major shrub or half-shrub present in the understory is broom snakeweed. The major perennial forb is globemallow.

The conifer type also covers less than 5 percent of the WSA. This type is restricted to the upper ends of the main canyons, such as Canon del Alamito and Canon del Norte. The overstory is dominated by ponderosa pine with some Douglas fir and aspen present in isolated spots. The understory is similar to that found in the pinyon-juniper type at the higher elevations.

Less than 5 percent of the WSA is occupied by the bosque type, which occurs in the broader swales and drainages and is dominated by salt cedar. Other species include inland saltgrass, alkali sacaton, giant sacaton, spike dropseed, and giant dropseed.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of 10 Federally-listed and 11 State-listed species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Sierra Ladrone WSA supports approximately 201 wildlife species, comprised of 51 reptile and amphibian species, 56 mammal species, and 94 resident and migratory bird species. A complete list of wildlife species for the Sierra Ladrone WSA is available for review at the Socorro Resource Area Office.

Mule deer and cougar are the only big game species that occur in the WSA's mountainous core. Pronghorn have been observed on the western mesa benchland and in the southern portion of the WSA. In the past, the mountain core of the WSA supported a moderate deer population that has since been depleted. Several factors could be responsible for the decline, some of which are disease, overharvest, poaching, predator loss, and drought. Abundant food is available and water sources, while not abundant, are believed adequate.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Badgers, desert

cottontails, black-tailed jackrabbits, white-throated woodrats, deermice, ground squirrels, and several species of bats also occur in the WSA.

The massive rock escarpments, canyons, and rock outcrops should be attractive to birds of prey. However, raptor density appears to be low. Birds which are commonly sighted in the WSA include horned larks, pinyon jays, western bluebirds, ravens, mourning dove, and Gambels and scaled quail.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

The Sierra Ladrones WSA contains two wildlife standard habitat sites (SHS's). These SHS's are described briefly below.

Pinyon-Juniper Woodlands

This SHS is found throughout the WSA in the higher elevations, with the best stands growing on sandy limestone hills, basalt hills, malpais, and loamy range sites. Small scattered stands of one-seed junipers are found around 6,000 feet on north-facing slopes. As the elevation increases, pinyon becomes more and more dominant until in the higher elevations, it is the dominant tree with alligator juniper and oaks being the subdominant trees. Diversity of nongame species is high in this SHS.

Mixed Shrub Grass Hill

This is a diverse SHS with habitat sites scattered throughout the WSA. These sites are adjacent or between pinyon-juniper woodlands. The habitat sites offer little cover for most wildlife species. Most shrubs are found in a sandier soil, on the north side of the hills, or along small arroyos or gullies. Grasses are the principal ground cover with black grama and galleta being the most common.

2. Threatened or Endangered Fauna Species

There are no known threatened or endangered species in the WSA. The area is currently being considered as a potential reintroduction site for the desert bighorn sheep, which is a New Mexico State endangered species.

F. Visual

The WSA is dominated by the granitic core of the Sierra Ladrones. The dramatic uplift of the mountain range, especially when viewed from the north, is inherently scenic. The panoramic view from the top of Ladrone Mountain can be spectacular, especially during the morning or evening hours.

The WSA's greatest scenic asset, however, is its landscape diversity which ranges from a spectacular mountain core to mesa grasslands, box canyons, rimrock, badlands, desert, and the floodplain of the Rio Salado.

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The WSA is visible from a distance of nearly 100 miles in some directions. The Sierra Ladrones stand as one of New Mexico's outstanding visual landmarks.

G. Cultural

A Special Project Cultural Resources Inventory (Class I) for the Sierra Ladrones WSA was completed by BLM in 1981. The cultural resource information compiled was based upon a comprehensive literature and records search. The following data were extracted from this report and historical documents. The full text of the report is available for review at the Socorro Resource Area Office.

The WSA is unusually rich in cultural resources, both historic and prehistoric. Although less than 3 percent of the WSA has been intensively inventoried, 18 sites have been recorded within the area. Recorded sites range from possible paleo/archaic lithic scatters to historic structures from the 1930's.

The name "Mountain of Thieves" is derived from use of the Sierra Ladrones, apparently by both Navajo and Apache bands, as a stronghold to raid Spanish and later Mexican and American settlements along the Rio Grande as far north as Albuquerque in the seventeenth, eighteenth, and nineteenth centuries. Although the Indians undoubtedly viewed their raids from a different perspective, to the Spanish and later Mexican and American colonists, the removal of livestock from ranches constituted depredations by "thieves". Since the Navajo and Apache themselves usually viewed these raids as primarily "economic" in nature, a form of tribute for past injustices as opposed to warfare, the Spanish name for the Sierra Ladrones becomes understandable.

Warfare between the Spanish, Mexicans, and Americans and the Indians took place in the Sierra Ladrones; however, documentation is very scarce. It is known the last U.S. Cavalry-Apache engagement within the southern portion of the WSA occurred in 1881. The combatants were Company K of the 9th U.S. Cavalry Regiment commanded by Colonel Parker and a small band of Warm Springs Apache under Nana. Parker's command was but a small contingent of a much larger U.S. military force which was pursuing Nana and his warriors, which numbered no more than 30 men. However, Nana ambushed Parker and his men in the Salado Box, killing three soldiers and wounding a number of others. There were no Apache casualties.

Nana's engagement with Colonel Parker in the Salado Box is but an example of the history of the Sierra Ladrones WSA. Legends of Conquistadors, buried Civil War cannons, lost treasure, lost bandit gold, lost mines, desperado hideouts, as well as stories of more recent moonshine-still hideaways abound in the WSA. Given its geographic proximity to the Rio Grande Valley and New Mexico population centers on the one hand and its isolation and ruggedness on the other, these stories have been encouraged and given some credibility by the environment of the area. But like Nana's raid, which is history, a number of the legends probably have some historical basis.

The prehistoric cultural resources of the WSA are more significant, especially from a scientific standpoint, than are its historic resources. Most of the known cultural sites within the WSA are prehistoric, and it is anticipated further inventory will broaden the gap in favor of prehistoric sites even further.

Existing data indicate the WSA has been utilized by humans for at least the past 10,000 years. Further, since recent data suggest paleo-Indian sites are likely to be found in high diversity mountain environments such as the core mountain area of the WSA, it is likely the WSA possesses cultural resources which extend even further into the past. Due to the WSA's pivotal geographic location, atypical prehistoric cultural resources (especially for the Mogollon-Anasazi cultures) are anticipated from this area.

H. Air

Generally, the quality of air within the Sierra Ladrones WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resource potential of the lands within the WSA is shown on Map 18-2 and the location of mining claims and lands under mineral leases are shown on Map 18-3.

1. Energy Minerals

As of December 1, 1984, there was one pre-Federal Land Policy and Management Act (FLPMA) oil and gas lease in the WSA.

a. Oil and Gas

The southwestern portion of the WSA is considered to have low potential for the discovery of oil and gas. Petroleum and natural gas may be present in Pennsylvanian rocks under this portion of the WSA, but the existence of traps and reservoirs has not been proven.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA. The east flank of the WSA overlies the western flank of a deep sill-like magma body, and seismic information indicates magma intrusion at a depth of about 5 kilometers below the northeastern portion of the WSA. Deep geothermal reservoirs of this nature have not yet produced commercial energy, and would test the limits of current technology. The probability for discovery of a commercial geothermal energy source within the WSA is judged to be low.

c. Uranium

See discussion under Nonenergy Minerals.

2. Nonenergy Minerals

As of September 17, 1984, there were 76 post-FLPMA mining claims recorded with BLM in the WSA.

a. Uranium/Copper/Cobalt/Nickel

During the mid-1950's, approximately 6,000 tons of uranium ore were produced from the Jeter deposit located approximately $\frac{1}{4}$ mile from the east boundary of the WSA. Occurrences of secondary copper minerals associated with uranium minerals have been verified along a 5-mile long section of the Jeter fault. The area has been prospected by means of shallow surface excavations and drilling during the mid-1950's and early-1970's, but the depressed condition of the uranium market in recent years has precluded additional exploration or development. The potential for the discovery of additional small deposits is considered to be high.

There are indications that the Precambrian metamorphic rocks in the mountainous core of the WSA may contain significant deposits of copper sulfide and uranium minerals, possibly associated with cobalt and nickel. Copper occurrences are reported to be scattered throughout the metamorphic terrain, and evidence implies that mineralization occurring along the Jeter fault is a result of metals being leached from the metamorphic rocks and deposited along the fault. Analysis of samples from a prospect in metamorphic rocks and trace element analysis of the Jeter ore body tend to support this theory. The potential for discovery of commercial deposits of this type is considered to be moderate.

b. Silver/Lead/Zinc/Barite

Numerous northwestern and northeastern-trending fractures in Precambrian rocks on the northeastern flank of the Ladrone Mountains are occupied by a complex network of siliceous and carbonate veins. Siliceous veins are known to contain minor amounts of lead-zinc-copper sulfides and moderate amounts of barite and silver. Carbonate veins carry economic grades of silver and some barite.

An area favorable for Mississippi Valley type lead-zinc-barite deposits in limestone has been tentatively outlined on the basis of hydrothermally silicified limestones and silicified fault breccia along the Ladron fault, about 1 mile west of Ladron Peak. These silicified zones are mostly barren of mineralization at the surface, but may be associated with Mississippi Valley type replacement deposits at depth. The potential for the discovery of silver, lead, zinc, and barite resources is judged to be moderate.

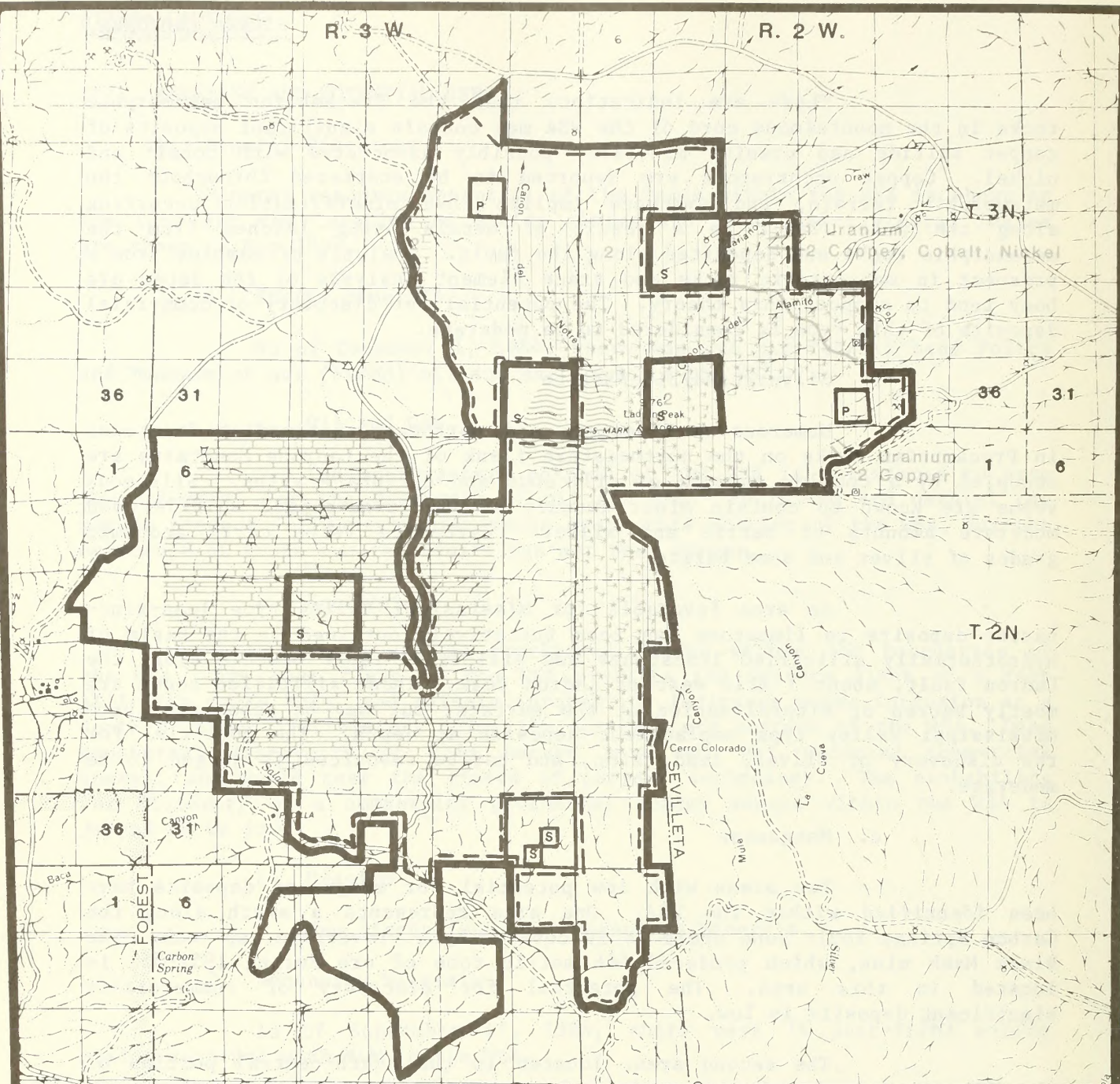
c. Manganese

Two areas with low potential for manganese deposits have been identified within the WSA. One area represents a swath along the Carbon Springs fault zone where it is covered by a travertine cap rock. The Black Mask mine, which produced 566 metric tons of ore during 1952-55, is located in this area. The potential for discovery of commercially significant deposits is low.

The second area, located in the south-central portion of the WSA, is associated with a late Cenozoic unconformity where the upper Madera limestone is overlain by limestone-cobble conglomerate of the Sierra Ladrones formation. Deposits adjacent to this unconformity have produced very minor amounts of low-grade manganese. It is likely that similar deposits could be found in the area, but they would be of too low a grade to be profitably mined, and are not considered to be an economical resource.

d. High-Calcium Limestone

The travertine caprock in the northwestern portion of the WSA, and the Madera limestone in the central portion of the WSA, represent a large reserve of cement and chemical grade limestone. The travertine deposit totals approximately 225 million metric tons of which 150 million



SIERRA LADRONES WSA (NM-020-016)

- WSA Boundary
- - - Amended Boundary (Proposed Action)
- BLM
- P Private
- S State

State and private ownership is identified only inside the WSA boundary.

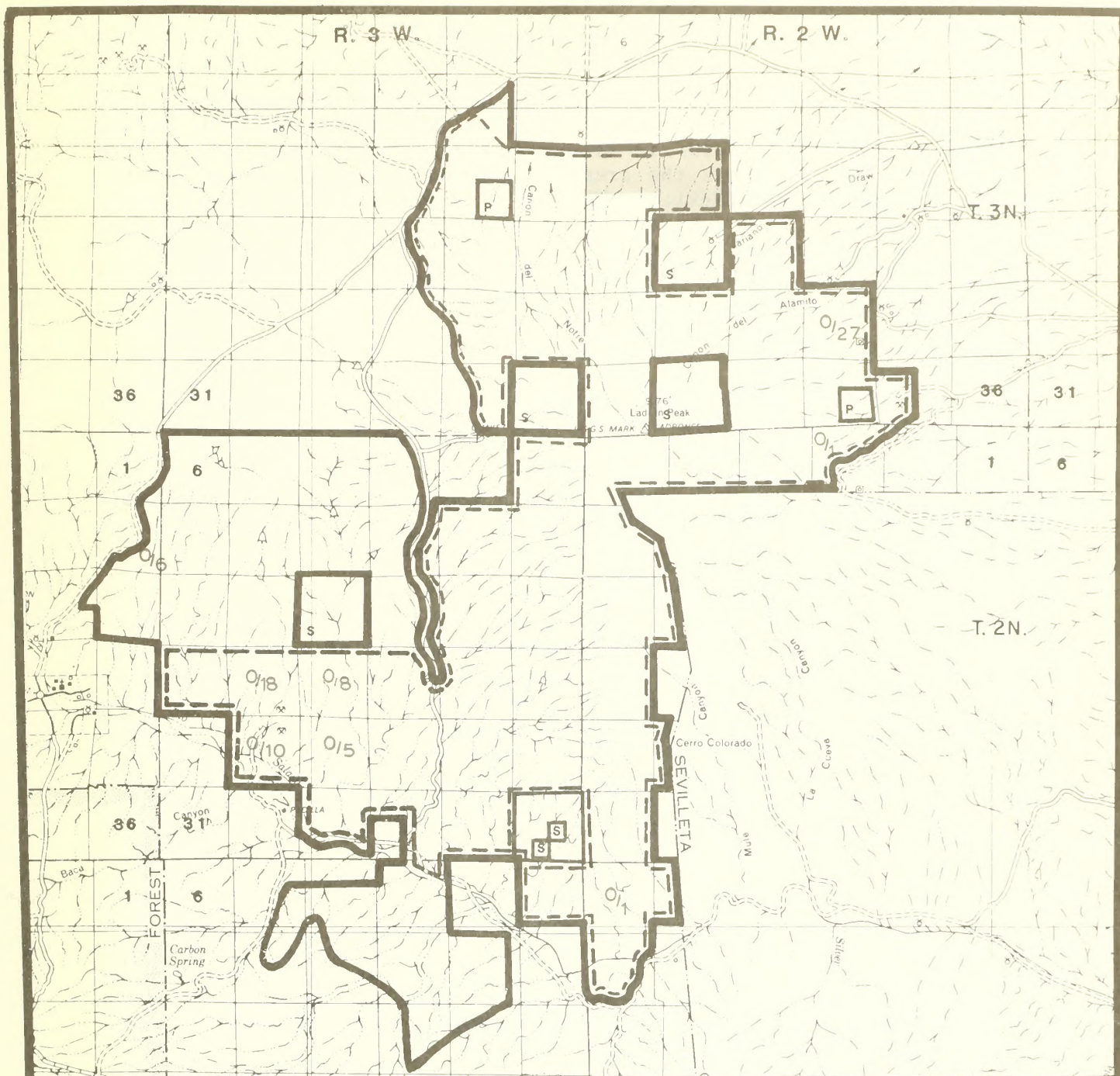
Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

MAP 18-2 MINERAL RESOURCE POTENTIAL*

- High Calcium Limestone
- Cobalt, Nickel
- Lead, Silver, Zinc, Barite
- Uranium, Copper

*Areas of high (1) and moderate (2) mineral potential are shown for lands within the WSA; the potential may extend outside the WSA boundary. Areas of low potential are not shown.



SIERRA LADRONES WSA (NM-020-016)

- WSA Boundary
- - - Amended Boundary (Proposed Action)
- ☐ BLM
- ☐ Private
- ☐ State

State and private ownership is identified only inside the WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces District, January 1985

MAP 18-3 MINING CLAIMS AND MINERAL LEASES

- 1/1 Pre-FLPMA Mining Claims per Section
- 1/4 Post-FLPMA Mining Claims per Section

☐ Pre-FLPMA Oil and Gas Lease

(Claim information from BLM records dated September 17, 1984; claims which overlap more than one section are counted in each section in which they occur.)

FLPMA was passed October 21, 1976.

tons are within the WSA, and the Madera limestone is estimated to total 25-50 million metric tons within the WSA. The principal obstacle to development of these deposits is transportation. The nearest railhead is 20 miles away, and roads in the area are generally poor. However, if the population in central New Mexico continues to grow, there may be sufficient demand for cement. Coal from the Riley-Puertecito area could possibly be used to fire a cement plant in the vicinity of Riley, utilizing locally derived limestone as raw material. The potential for high-calcium limestone is considered moderate.

e. Gypsum

Within and adjacent to the WSA, gypsum beds crop out near the top of the Yeso formation and near the base of the Glorieta sandstone. It has been estimated that 194,000 metric tons of near-surface gypsum deposits occur within the WSA. However, this gypsum is remote from principal construction markets and has poor access. Mining is unfavorable because of thick overburden, interbedded clastic and carbonate units, and structural complexity. The potential is considered low.

f. Tungsten/Bismuth/Fluorspar

There is a possibility that deposits of tungsten-bismuth-fluorspar exist within the WSA. Samples taken from a plug-like body of coarse grained granite contained minor amounts of fluorspar. In addition, stream sediments emanating from this area southwest of Ladron Peak contain anomalous values of tungsten and bismuth. This information suggests that a greisen or vein-type tungsten-bismuth-tin deposit is possible within the area. This is speculative, and the favorable area needs additional study to verify this possibility. The potential is considered low.

B. Watershed

The southern two-thirds of the WSA is located in the Rio Salado watershed and the northern third in the Rio Puerco watershed. Both watersheds in the WSA are characterized by thin, rocky, well-drained soils with sandy gravelly loam textures underlain by granite. The area south of the Rio Salado is in the Cerro Colorado watershed and is characterized by deep, well-drained and gravelly soils.

The Rio Salado and Rio Puerco have extensive watersheds but are dry during most of the year. Due to the thin rocky soil, there is rapid runoff and little ground water storage. Erosion currently is light to moderate but the potential for accelerated erosion is high. There are no erosion control projects in the WSA.

There are two wells within the WSA. Numerous springs and seeps also occur in the area. Four springs have been developed, three on the northern side and one on the western side of the WSA. Ground water in two wells located just outside the WSA boundary is representative of the WSA. Analysis of ground water samples taken from these wells indicates high dissolved solids and marginal limits of gross alpha natural uranium, but the

MINERAL RESOURCES POTENTIAL OF THE SIERRA LADRONES WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*	Approximate Acreage in Amended Boundary*
Energy Minerals				
Oil and Gas	Mesozoic and Paleozoic marine sedimentary rocks	Low	--	--
Geothermal	Igneous intrusions along Rio Grande rift	Low	--	--
Uranium	Stratiform deposits within Precambrian rocks and supergene enrichment along faults and shear zones	High Moderate	1,800 8,200	1,800 8,200
Nonenergy Minerals				
Copper ^{a/}	Stratiform deposits within Precambrian rocks; vein or replacement deposits in Precambrian and Paleozoic rocks; supergene enrichment along faults	Moderate	10,000	10,000
Cobalt ^{a/} , Nickel ^{a/}	Associated with stratiform uranium/copper deposits	Moderate	8,100	8,100
Manganese ^{a/}	Late Cenozoic hydrothermal-related deposits	Low	--	--
Gypsum	Paleozoic evaporite deposits in Yeso formation	Low	--	--
High-Calcium Limestone	Late Cenozoic travertine deposits	Moderate	10,800	5,700
Silver ^{a/} , Lead ^{a/} , Zinc ^{a/} , Barite	Vein and replacement deposits in Precambrian and Paleozoic rocks	Moderate	600	600
Tungsten ^{a/} , Bismuth ^{a/} , Fluorspar ^{a/}	Vein-type deposits in Precambrian rocks	Low	--	--

Notes: *Acreage was not calculated for areas with low potential.

^{a/}Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

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water is suitable for livestock watering purposes. Two springs within the WSA also have some gross alpha natural uranium, but levels are not harmful for livestock purposes.

C. Livestock Grazing

1. Allotments

One grazing allotment and parts of eight other grazing allotments lie within the Sierra Ladrones WSA. All nine allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Cerro Colorado	1,376	144	1,376	100%
Ojo Saladito	11,291	1,562	3,070	27%
Monte Negro	4,764	480	2,400	50%
North Ladron	7,309	1,464	4,000	54%
Riley Community	2,592	252	156	6%
La Jencia	18,044	1,992	10,420	58%
West Ladron	24,990	2,460	17,243	69%
Ladron Peak	3,905	444	3,300	84%
Rio Salado West	7,231	756	723	10%
TOTAL			42,688	

2. Ranch Management

Permittees periodically inspect and maintain as necessary most rangeland developments using motor vehicles. Fence inspection and maintenance is sometimes performed on horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Cerro Colorado	1 mile fence
Ojo Saladito	1 dirt tank 2½ miles fence 2 2/5 miles access routes
Riley Community	1½ miles fence
La Jencia	19 miles fence 2 spring developments 2 miles pipeline with 4 drinking troughs 7 dirt tanks 18 miles access routes 1 storage tank
West Ladron	22 miles fence 1 spring development 8½ miles pipeline 6 drinking troughs 5 dirt tanks 1 windmill 15 miles access routes
Rio Salado	1 dirt tank
North Ladron	2 miles pipeline 1 drinking trough 2 miles fence
Ladron Peak	2½ miles fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned within the WSA at this time.

D. Timber Harvest

Approximately 90 percent (38,800 acres) of the Sierra Ladrones WSA is classified as nonproductive forest land (New Mexico Forest Inventory 1975). One-seed juniper is the dominant tree species with pinyon pine representing only a minor component. Scattered stands of ponderosa pine are found within drainages at the higher elevations. The higher elevations also include some Douglas fir and aspen.

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Information on stand parameters has never been collected, but certain generalizations can be made from field observations. The stunted nature of the vast majority of juniper is indicative of a very low site quality. Wide tree spacing and the estimated 5 percent crown closure result in a low level of stocking that precludes economic harvesting of the woodland resource. Poor conformation, inherent in understocked stands, also limits the usefulness of the product. Age class is unknown but is certain to be unbalanced due to the preponderance of overmature individuals and a lack of regeneration.

The potential for saw timber production on a sustained yield basis does not exist within the WSA. Production of posts and poles is probably of marginal value due to the poor conformation of the juniper. At present, fuelwood production is considered marginal due to the lack of physical access to the majority of forested lands and the availability of alternate cutting areas (i.e., Forest Service administered land).

E. Recreation

Recreational use of the WSA is moderate. Existing recreational activities in the WSA include day hiking, horseback riding, backpacking, technical rock climbing, natural history activities (e.g., birdwatching), environmental exploration, rockhounding, hunting, and photography. Off-road vehicle use is confined primarily to the Rio Salado and larger arroyos.

Although water is scarce in the WSA, this has not hindered backcountry use and is not expected to do so in the future for those accustomed to or appreciative of desert mountain recreational activities. However, the lack of water within the range is expected to hold this type of use by the public to moderate levels.

Peripheral use (i.e., automobile touring) and short day hikes along the WSA's northern and western peripheries, can be expected to increase due to ease of access and proximity to Socorro, Belen, and Albuquerque, New Mexico.

F. Education/Research

Although the Sierra Ladrones have been the subject of studies and research by the New Mexico Bureau of Mines and New Mexico Institute of Mining and Technology, the WSA is not currently utilized for any known educational or research purpose. Environmental education and research potential for the WSA, however, is considered significant for cultural, natural ecosystem, paleontological, and geologic studies.

G. Wildlife

The New Mexico Department of Game and Fish (NMDGF) has identified the WSA and adjacent Sevilleta National Wildlife Refuge lands as possessing high potential for the reintroduction of desert bighorn sheep. Habitat conditions are deemed excellent with the possible exception of the need to improve water sources within the mountain range.

A wildlife Habitat Management Plan (HMP) has been developed for the Sierra Ladrones in cooperation with the NMDGF. It is designed to improve and maintain habitat for mule deer, upland game, and nongame wildlife species, and to determine the feasibility of reestablishing desert bighorn sheep into the habitat area. The objectives of the plan are to create additional water sources and to produce more forage for wildlife. Actions proposed in the plan include construction of 3 wildlife waters, maintenance of 7 existing pipeline wildlife watering facilities, development of 8 springs, and fencing portions of 6 existing earthen reservoirs. When implemented, these actions would increase the potential of the area as wildlife habitat.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Sierra Ladrones WSA generally appears natural. The eastern mountain core and southwestern corner of the WSA are highly natural in appearance and affected primarily by the forces of nature. The naturalness of the WSA is further enhanced by its dramatic topographic relief, diversity of landforms, and relatively large size.

The WSA is impacted by vehicle routes which vary from jeep trails to two-track ranch access routes. Approximately 2½ miles of a bladed road which provides access to a windmill and large water storage tank has been cherry-stemmed out of the WSA. Other intrusions consist of numerous rangeland development structures. Rangeland developments are concentrated on the northwest shoulder of the WSA. These developments include fences, dirt tanks, developed springs, pipelines, drinking troughs, and access routes. The generally high quality of naturalness in the WSA is reduced in this area of more intensive grazing management.

Seventeen mining prospects and six old mines are also present in the WSA. These are, for the most part, historic mining impacts which are relatively small in size and unobtrusive in appearance. No active mining is taking place in the WSA at present.

Although human intrusions are present in the mountain core and in the southwestern corner of the WSA, the rugged topography moderates the significance of these intrusions to a considerable degree. In all cases, they are substantially unnoticeable in the area as a whole.

b. Solitude

The Sierra Ladrones WSA is a rugged range of unusual topographic diversity. Its high mountain peaks, isolated canyons, and inaccessible badlands provide the visitor with outstanding solitude opportunities.

c. Primitive and Unconfined Recreation

The WSA provides visitors with outstanding primitive recreational opportunities for day hiking, backpacking, technical rock climbing, horseback riding, photography, nature study, and environmental exploration. The proximity and ease of access of the WSA to Albuquerque, Belen, and Socorro, New Mexico, further enhance the value of these opportunities to the general public.

The WSA is also recreationally important because it is well suited to fall, winter, and spring use. It is during these seasons the WSA is most attractive for recreational pursuits.

2. Special Features

The Sierra Ladrones WSA contains the northernmost known exposures of lower Mississippian rocks in New Mexico. Exposures of these rocks in west-central New Mexico are limited largely to the Magdalena, Lemitar, and Ladrone Mountains. From a regional viewpoint, the Mississippian strata of this region fill a gap between those of southern New Mexico, described by Ladron and Bowsher (1949), and those of northern New Mexico, described by Armstrong (1955). The exposures are of special interest to those wanting to become familiar with the lithology and paleontology of the Mississippian. In the Sierra Ladrones, these rocks are well exposed and abundant in fossils. The excellent descriptions and illustrations of these rocks and fossils by Armstrong make the area valuable for educational purposes.

The scenic values of the Sierra Ladrones WSA are significant both when viewed from a distance (e.g., Interstate 25) and from within the WSA proper. The range of topographic relief and the landform diversity within the WSA create a southwestern scenic resource of considerable importance.

The ecological values of the WSA are also high. The WSA lies near the junction of two major ecoregions and includes such a wide range of landform and life zone diversity that the ecological resources of the area can be considered scientifically valuable.



View of Ladrone Peak.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness

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and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Sierra Ladrones WSA as being within the Colorado Plateau Province and the Upper Gila Mountains Forest Province. The potential natural vegetation consists of 37,820 acres of juniper-pinyon woodland within the Upper Gila Mountains Forest Province and 2,000 acres of pine Douglas fir forest, and 2,868 acres of grama-galleta steppe in the Colorado Plateau Province.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours, Las Cruces, New Mexico within 4 hours, and El Paso, Texas within 5 hours driving time of the WSA.

B. Manageability

The Sierra Ladrones WSA could be managed as wilderness. Manageability is a judgment made by the BLM after considering such factors as private and State inholdings, valid existing rights, topography, and overall land ownership patterns.

Inholdings within the WSA include 1,960 acres of State land and 373 acres of private land. Acquisition of these inholdings, through voluntary exchange, would enhance manageability.

The following State and private lands should have a high priority for acquisition if the area is designated wilderness:

Lands Recommended for Acquisition

<u>Legal Description</u>	<u>Acres</u>
T. 1 N., R. 3 W., Section 2: that portion north of the Rio Salado	400
Section 12: that portion north of the Rio Salado	160
T. 2 N., R. 2 W., Section 16: All	640
Section 20: that portion west of the Sevilleta grant	285
Section 32: that portion west of the Sevilleta grant	195

Lands Recommended for Acquisition (continued)

<u>Legal Description</u>	<u>Acres</u>
T. 2 N., R. 3 W., Section 30: that portion north of the Rio Salado	180
Section 32: that portion north of the Rio Salado	10
Section 34: SW $\frac{1}{4}$	160
Section 36: NW $\frac{1}{4}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$	80
T. 3 N., R. 2 W., Sections 20 and 32: All	1,280
Section 34: SE $\frac{1}{4}$	160
T. 3 N., R. 3 W., Section 14: SE $\frac{1}{4}$	160
Section 36: All	640
TOTAL	4,350

Grandfathered livestock operations in the WSA are compatible with wilderness management. Necessary vehicle access for maintenance of existing rangeland developments could be allowed under wilderness management.

Reasonable access is also guaranteed to State and private inholdings. These access needs are not expected to result in significant management problems. Existing off-road vehicle use is confined primarily to the Rio Salado and the larger arroyos which drain into the Rio Salado. Restricting access on these arroyos would be a management concern. Management could include constructing a fence across the Rio Salado, public education, and close management attention. The potential for controlling vehicular access in the eastern and northern portions of the WSA is excellent.

The majority of mining claims within the WSA are clustered in the northeastern and southwestern portions of the area. The impact these claims may have on wilderness management is difficult to predict at this time. No mining activity of consequence has occurred in the WSA in the past 20 years. Although a Mining Plan was filed with BLM in 1980 for initiating mineral exploration on one claim, no further action has been taken by the claimant.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has generally indicated strong support for designation of a Sierra Ladrones Wilderness Area or an alternative designation including primitive area status. This support has a history dating at least to the late-60's. Although the support tends to be centered in Albuquerque and Santa Fe, New Mexico, it is Statewide in scope.

There was also public support for a WSA larger than that which was selected by the BLM in the New Mexico Wilderness Study Area Decisions, March 1980. This resulted in a successful appeal to the Interior Board of Land Appeals (IBLA). The IBLA decision added approximately 3,380 acres of land south of the Rio Salado to the Sierra Ladrones WSA. These additional lands have been evaluated and are included in this report.

The most commonly cited reasons in support of wilderness designation included the WSA's outstanding solitude and natural values, its recreation potential, and proximity to Albuquerque, Belen, and Socorro, New Mexico, combined with high scenic, wildlife, and ecological values.

Opposition to wilderness designation has been intense from local mining interests who feel designation would adversely impact mineral prospecting and development. Most area grazing permittees are also opposed to wilderness designation. They feel designation would adversely affect livestock operations on those portions of their respective allotments located within the WSA.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 27 letters were received. Twenty-one respondents favored wilderness designation for Sierra Ladrones, four were opposed, and two provided information but neither favored or opposed designation. Supporters of wilderness designation cited the WSA's wilderness values, which are felt to be of such high quality that the area is one of the best BLM wilderness candidates in the State. These values are further enhanced by the WSA's location adjacent to the Sevilleta Land Grant, which is managed as a natural area and wildlife refuge. Eighteen of the respondents also suggested enlarging the suitable recommendation to include additional lands north of the Rio Salado.

The alternative boundary proposed in public comments represents a new alternative which was not considered in the draft version. This new alternative has been evaluated in Chapter VI, Alternatives and Impacts, under the Amended Boundary Alternative.

The primary reasons for opposition to wilderness designation centered around the WSA's potential for mineral discovery and development. It was also noted that although Sierra Ladrones has a high favorability for economic mineral deposits, because a quantifiable value cannot be placed on such deposits and their development, it would appear that they are not given adequate weight in the resource allocation process. It was further noted

that the inability to ascribe a specific value to a potential energy or mineral source should not cause it to be ignored in land planning.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, education/research, and timber harvest are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.
An Alternative that Includes a Different Amended Boundary	Other boundary adjustments were not evaluated because the amended boundary developed by BLM adequately balanced the resource conflicts and wilderness values.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
Amended Boundary (Proposed Action)	Improves naturalness and manageability and reduces conflicts.
No Action/ No Wilderness	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The quality of the WSA's wilderness values and potential mineral conflicts are the primary issues for this WSA.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 42,688 acres of public land within the Sierra Ladrones WSA would be recommended suitable for wilderness designation. (See Map 18-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide the existing wilderness values present in the area with long-term Congressional protection. The BLM could manage the Sierra Ladrones WSA in the long-term to provide a quality wilderness experience.

2. Impacts to Minerals

It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Sierra Ladrones WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full potential of the area could not be assessed. Opportunities to explore and develop mineral resources in the following areas would be forgone: 1,800 acres with high potential for uranium, 8,200 acres with moderate potential for uranium, 10,000 acres with moderate potential for copper, 8,100 acres with moderate potential for cobalt and nickel, 10,800 acres with moderate potential for high-calcium limestone, and 600 acres with moderate potential for silver, lead, zinc, and barite. Wilderness designation would prevent large scale development of these resources. This could result in significant impacts to mineral resources.

3. Impacts to Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and BLM.

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be moderate.

Existing rangeland developments would not be removed so long as they are necessary to ranch operations. Vehicle routes necessary to maintain 14 dirt tanks, 3 developed springs, 12½ miles of pipeline, 1 windmill, and 1 storage tank could be restricted to use by permit only.

B. Amended Boundary (Proposed Action)

Under this alternative, 31,244 acres of public land would be recommended suitable for wilderness designation and 11,444 acres would be recommended unsuitable for wilderness designation. Inholdings within the amended boundary include 373 acres of private land and 1,320 acres of State land. (See Map 18-1 for amended boundary.)

The amended boundary would include the mountainous core of the WSA, the escarpments and deep canyons along the north bank of the Rio Salado, as well as riparian areas along the Rio Salado. This area has high wilderness values and could be managed as wilderness. The amended boundary would exclude 8,064 acres from the northwest corner of the WSA and 3,380 acres south of the Rio Salado. Excluding these areas would improve the naturalness and manageability of the WSA by eliminating areas of intensive grazing management and associated rangeland developments as well as private and State inholdings. It would also improve the natural boundaries of the WSA by utilizing the Rio Salado as much of the southern boundary.

If this area is designated wilderness, existing and potential uses would be regulated by the Wilderness Management Policy (BLM 1981).

This section presents an alternate boundary which differs from the boundary presented in the draft report. This readjusted boundary alters the original recommendation by adding approximately eight sections in the southwestern portion of the WSA. This area, which may be described as the "Rio Salado Breaks," contains extensive deeply cut canyons and escarpments as well as riparian areas along the Rio Salado.

1. Impacts to Wilderness Values

Wilderness designation would provide the wilderness values within the amended boundary with significant long-term Congressional protection. The deletion of southern and western portions of the WSA would enhance wilderness values by removing the majority of rangeland developments

and access routes from the area. Under this alternative, the WSA's finest representation of mesa benchlands, badlands, and box canyons as well as the mountainous core of the WSA would be permanently preserved.

The naturalness of portions of the WSA recommended as unsuitable for wilderness designation could be impacted by mineral exploration for high-calcium limestone, additional rangeland developments, or continued vehicular use.

2. Impacts to Minerals

The impacts to mineral resources under this alternative would be the same types of impacts as those described under the All Wilderness Alternative. The degree of impact would be less under this alternative, however. Approximately half of the area within the WSA with moderate potential for high-calcium limestone has been recommended as unsuitable for wilderness designation under this alternative. Exploration and location of mining claims or high-calcium limestone could occur on approximately 5,100 acres with moderate potential.

The opportunity to explore and develop mineral resources in the following areas would be forgone: 1,800 acres with high potential for uranium, 8,200 acres with moderate potential for uranium, 10,000 acres with moderate potential for copper, 8,100 acres with moderate potential for cobalt and nickel, 5,700 acres with moderate potential for high-calcium limestone, and 600 acres with moderate potential for silver, lead, zinc, and barite.

3. Impacts to Livestock Grazing

Under this alternative, 20 miles of barbed wire fencing, 7½ miles of buried plastic pipeline, 6 livestock drinking troughs, 2 wildlife water troughs, 9 dirt tanks, approximately 20 miles of vehicle routes, 2 developed springs, 1 storage tank, and 1 corral would be eliminated from wilderness management. This would reduce impacts to livestock grazing by eliminating the majority of rangeland developments from the WSA. Although impacts to livestock operations inside the amended boundary would remain the same as those described under the All Wilderness Alternative, their significance would be diminished.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 42,688 acres of public land within the Sierra Ladrones WSA would be recommended nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing uses would continue and potential uses would be carried out as described in Chapter III.

The most probable uses of the area are continued livestock grazing, mineral exploration and development, and recreation. Management actions such as rangeland developments and wildlife and watershed projects could also occur in the long-term.

1. Impacts to Wilderness Values

The wilderness values of the Sierra Ladrones WSA would not be provided with long-term Congressional protection. Although the area would probably retain its wilderness values in the short-term, future mining activity could result in a significant reduction of the area's naturalness, outstanding opportunities for solitude and primitive recreation, and scenic, geological, and ecological values.

The highest mineral development potential is located in the core mountain area of the WSA, generally above 6,500 feet in elevation. Large scale mining activity in this portion of the WSA could significantly reduce the wilderness values of the entire WSA.

2. Impacts to Minerals

Under the No Action/No Wilderness Alternative, there would be no impacts to locatable mineral resources.

3. Impacts to Livestock Grazing

Intensive management techniques could be applied and new rangeland development structures could be installed. Livestock operations could be impacted if extensive mineral development occurred.

APPENDIX 19

STALLION WSA (NM-020-040)

I. GENERAL DESCRIPTION

A. Location

The Stallion Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 14 air miles east, northeast of the community of Socorro.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Bustos Well, Sierra de la Cruz, Sierra Larga North, and Sierra Larga South, New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

The WSA is located on the eastern edge of the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 12 to 14 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is characterized by a semiarid mountainous environment which varies from the near vertical rock escarpments and eroded, rugged flanks of the Sierra Larga to rolling pinyon-juniper and grass covered hills. Elevations range from 5,500 feet to 7,100 feet with a maximum relief of 1,600 feet.

C. Land Status

The WSA includes 24,238 acres of public land. State inholdings within the WSA total 1,280 acres. There are no private inholdings within the WSA. (See Map 19-1 for land status within the WSA boundary.)

No rights-of-way are located within the technical boundaries of the WSA. However, two rights-of-way corridors to accommodate U.S. Army White Sands Missile Range (WSMR) access routes and facilities extend into the WSA.

D. Access

Primary legal access to the WSA is provided by Interstate 25, then north on County Road 146 and BLM Road 2109.

STALLION WSA (NM-020-040)

Proposed Action--No Action/
No Wilderness Alternative

— WSA Boundary

■ BLM

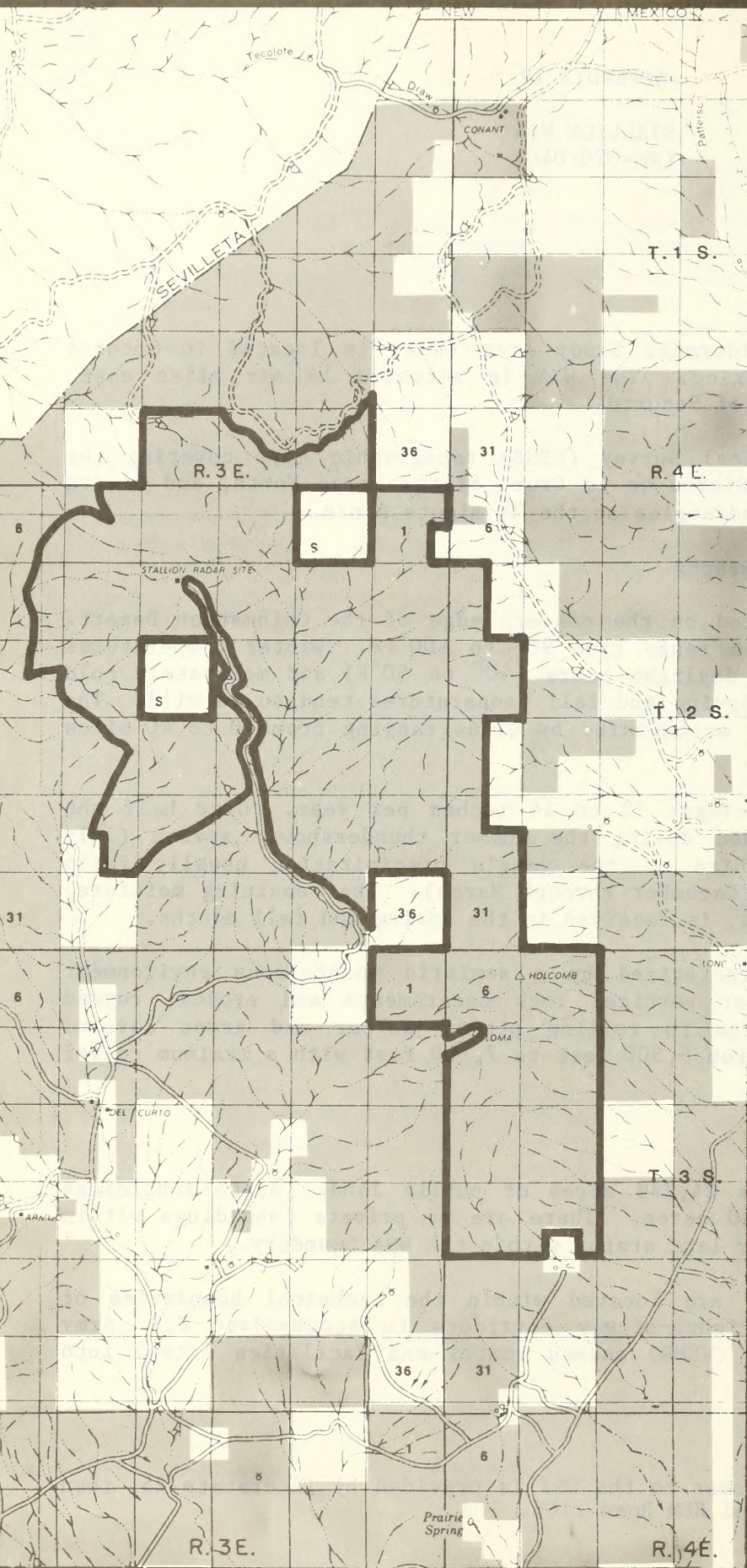
□ State

*State ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces
District, January 1985.

MAP 19-1 LAND STATUS



E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 24,238 acres as wilderness.	°Manage 24,238 acres without wilderness protection.
-Close 20 miles of vehicle trails.	-Vehicle use would be allowed to continue on designated roads and trails.
-Require permits for vehicular access to maintain 5 dirt tanks, 1 windmill, 2 storage tanks, and 1/5 mile of pipeline.	
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-24,238 acres would be closed to energy minerals leasing.	-24,238 acres would be open to energy minerals leasing and mining claim location.
-24,238 acres would be closed to mining claim location. The closed area includes 24,200 acres with moderate potential for copper.	
-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.	-Access would be granted to WSMR personnel to recover missile debris which might impact in the area. Additional instrumentation and tracking sites could be authorized.
-A visitor permit system would be implemented.	
-Attempts would be made to acquire 1,280 acres of State land inholdings.	-No special attempts would be made to acquire State land inholdings.
-2 miles of surface pipeline and 2 drinking troughs authorized under the Interim Management Policy would be removed from the Tecolote Draw allotment.	-2 miles of surface pipeline and 2 drinking troughs would be allowed to remain on the Tecolote Draw allotment.
-Approximately 23,000 acres of juniper-pinyon woodland would not be available for fuelwood and fence post cutting and sale.	-Approximately 23,000 acres of juniper-pinyon woodland would remain available as fuelwood and fence post cutting and sale.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (23,238 acres)	Wilderness protection would maintain the area's existing low quality naturalness and outstanding opportunities for solitude and primitive recreation.
No Action/No Wilderness (23,238 acres) (Proposed Action)	Although no actions are planned which would affect the area's wilderness values, long-term nonwilderness management actions such as mineral exploration or expansion of military instrumentation could degrade these values.

II. EXISTING RESOURCES

A. Geology

The Stallion WSA is located within the central area of the Joyita uplift. This series of hills, mountains, and cuernas forms the highlands between the Rio Grande rift to the west and the Jornada del Muerto Basin to the east. The Joyita uplift merges into the Los Pinos uplift and Chupadera platform to the north, and the Loma de las Canas uplift to the south.

Rock units present in the WSA range in age from Permian to Triassic. The Permian age Yeso formation, Glorieta sandstone, and San Andres limestone are present throughout the WSA. These formations consist mainly of limestone, shale, sandstone, siltstone, and gypsum. The siltstone, shale, and sandstone of the Triassic age Dockum formation crops out in the southeastern and southwestern portions of the WSA.

B. Water

The western portion of the WSA is located in the Rio Grande Basin and the eastern portion lies in the Jornada del Muerto Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

The only developed ground water source within the WSA is a well with a windmill. No information is available on the water quality of this well. Therefore, information from New Well, which is located just outside the western boundary of the WSA, will be used as representative of the WSA. New Well was drilled to a depth of over 500 feet. Analysis of ground water indicates it is suitable for livestock watering purposes.

C. Soils

The majority of the Stallion WSA is underlain by limestones over sandstones. Approximately 60 percent of the soils occur on limestone. On mesa tops and hills, soils are shallow to moderately deep and gravelly with small inclusions of deep loamy soils in small valleys and swales.

Twenty-five percent of the soils are shallow to moderately deep loamy soils over gypsum. Some of the gypsum areas on the eastern side of the WSA fall into the badland type.

The remaining 15 percent of the WSA has moderate to deep loamy soils that occur in the swales and lower areas.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: pinyon-juniper, grassland, desert shrub, and wasteland.

The pinyon-juniper type dominates the WSA with 94 percent of the WSA classified as this type. One-seed juniper is the aspect vegetation, comprising 3 to 20 percent of the composition. Pinyon, the codominant tree species, varies in composition from a trace to 5 percent. The understory vegetation is dominated by warm-season grasses. The grama grasses are the most prevalent, sometimes making up to 70 percent of the composition on the site. Blue grama and black grama have the highest composition, followed by sideoats grama and hairy grama. Of lesser frequency are various other warm-season grasses, including purple muhly, galleta, Fendler threeawn, ring muhly, sand dropseed, and spike dropseed. Cool-season grasses include silver bluestem, Indian ricegrass, wolftail, bottlebrush squirreltail, and New Mexico feathergrass. Some areas classified as pinyon-juniper, that exist on soils with a high gypsum content, are dominated by gypgrass. Broom snakeweed is the main half-shrub component for the pinyon-juniper type, comprising up to 30 percent of the composition. Other shrubs and half-shrubs present include datil yucca, hairy mountain mahogany, feather peabush, Mormon tea, littleleaf sumac, squawberry, mariola, prickly pear, and ocotillo. In gypsum soils, coldenia is the dominant plant species. Forbs present include ironplant goldenweed, Rocky Mountain zinnia, globemallow, hog potato, aster, and spectaclepod.

The grassland type which covers 2 percent of the WSA is represented by two subtypes. The short grass subtype is located in the northwestern and southeastern portions of the WSA. This subtype is dominated by the grama grasses, and also includes spike and sand dropseeds, burrograss, gypgrass, fluffgrass, ring muhly, and bush muhly. Shrubs present are cholla, datil yucca, slender gray sagebrush, and Mormon tea. Forbs include ironplant goldenweed, globemallow, desert holly, and Russian thistle. The mid-grass subtype is characterized by alkali sacaton. Giant sacaton also occurs in the overflow drainages of the WSA, representing 26 to 88 percent of the composition. Other grasses present are burrograss, blue grama, galleta, vine-mesquite, and mat muhly. Forbs include Russian thistle, desert holly, white horse nettle, and threadleaf groundsel. The only shrub of significant composition in this subtype is broom snakeweed. However, traces of one-seed juniper, fourwing saltbush, cholla, and Apacheplume are present.

The desert shrub type represents 2 percent of the WSA. This type is located in the southeastern and northwestern portions of the WSA. Dominant shrub species are cholla and squawberry. Other shrubs include winterfat, creosote, broom snakeweed, coldenia, slender gray sagebrush, and Mormon tea. Grasses are represented by the gramas, spike dropseed, burrograss, ring muhly, sand muhly, gypgrass, fluffgrass, alkali sacaton, and galleta. Forbs include ironplant goldenweed, globemallow, and wild buckwheat.

Approximately 2 percent of the WSA is classified as wasteland. This area is primarily found on the eastern and northwestern flanks of the Sierra Larga, and is characterized by steep slopes and sparse juniper.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of five Federally-listed and five State-listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Three Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. The SHS's support 169 wildlife species, which include 50 mammal species, 28 reptile and amphibian species, and 91 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file at the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Deer densities for this portion of the WSA may range as high as three animals per square mile. Pronghorn are not abundant in the WSA.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Common small mammals include desert cottontails, prairie dogs, black-tailed jackrabbits, white-throated woodrats, deermice, and ground squirrels.

The mountainous topography and numerous rock outcrops are attractive to birds of prey. Commonly sighted birds include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The FWS furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which revealed that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. However, potential habitat exists for supporting migrating individuals. The biological assessment and related correspondence are on file at the Socorro Resource Area Office.

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F. Visual

The scenic quality of the WSA is considered moderate. Landforms range from grassland to rolling pinyon-juniper savannah and forest to steep box canyons and rugged multicolored badlands.

G. Cultural

Four cultural sites are currently recorded within the WSA. They range from lithic scatters to a historic structure dating from the first quarter of the twentieth century. Seventy additional sites are recorded within a 12-kilometer radius of the WSA. The heavy concentration of recorded sites on adjoining lands suggests a high probability for the occurrence of unrecorded sites within the WSA.

H. Air

Generally, the quality of air within the Stallion WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resource potential of the lands within the WSA is shown on Map 19-2 and the location of lands under mineral leases is shown on Map 19-3.

1. Energy Minerals

As of December 1, 1984, there were two post-Federal Land Policy and Management Act (FLPMA) oil and gas leases in the WSA.

a. Oil and Gas

Paleozoic rocks favorable for the generation of oil and gas underlie the WSA, but faulting probably precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

b. Uranium

Uranium is known to occur in Paleozoic limestones and may occur in Late Tertiary valley-fill sediments in the area surrounding the WSA. Paleozoic limestones crop out in the WSA but past prospecting has not disclosed any uranium occurrences. Late Tertiary sediments do not crop out in the WSA. The WSA is considered to have low potential for the discovery of uranium deposits.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

a. Copper

Copper deposits in Permian red beds are known to occur in a belt extending from Scholle to Carthage passing through the WSA. Some of the deposits were mined in the past but have been uneconomic in recent years. The red beds crop out extensively in the WSA. For this reason, the WSA is considered to have moderate potential for the occurrence of copper mineralization.

b. Gypsum

The Permian age Yeso formation, which contains gypsum, is found in the northern and western portions of the WSA. The deposits are considered to have a low potential for use because of lack of local demand and the availability of more pure deposits in other parts of central New Mexico.

STALLION WSA (NM-020-040)

Proposed Action--No Action/
No Wilderness Alternative

- WSA Boundary
- BLM
- State

*State ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

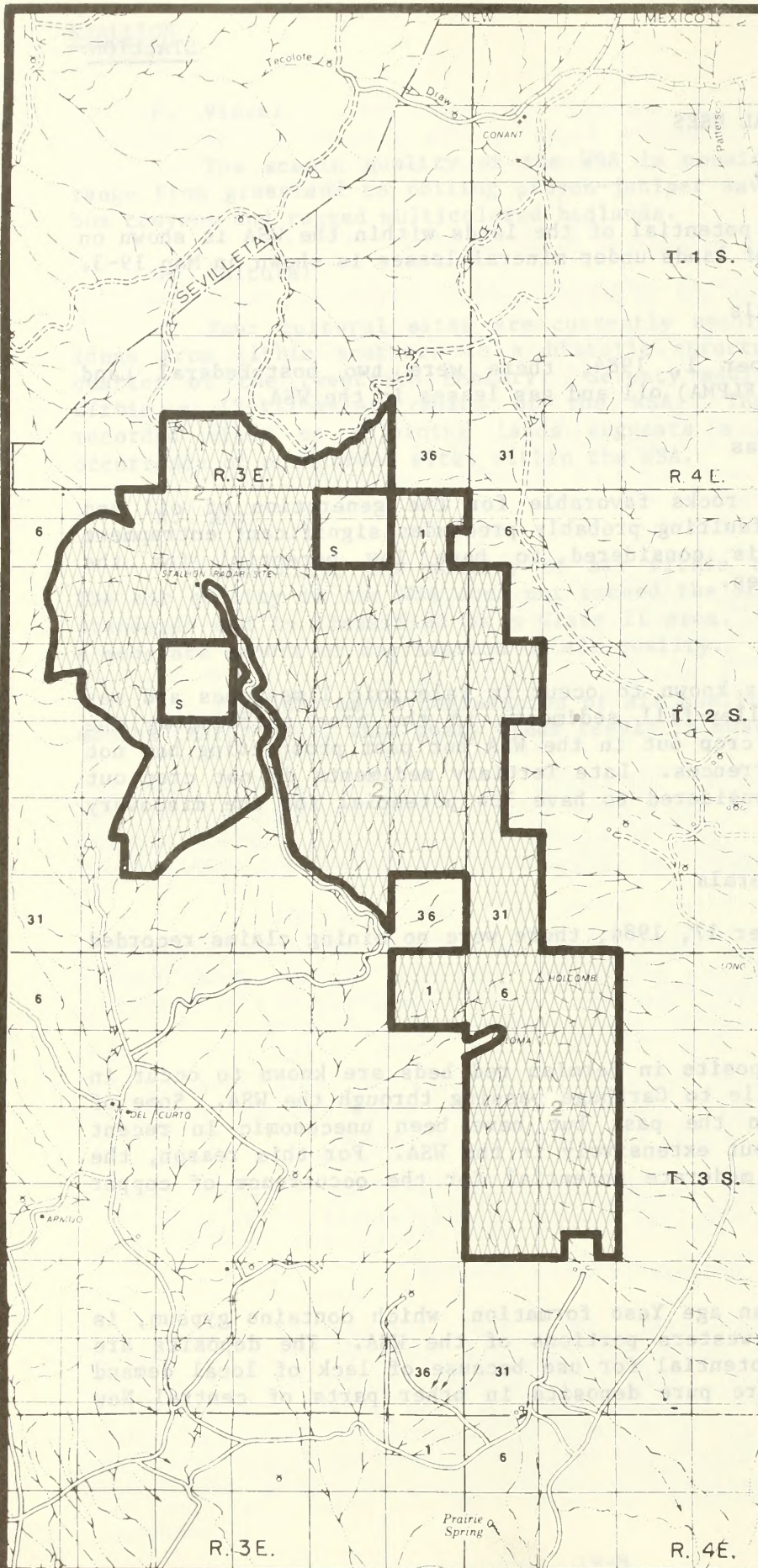
Source: USDI BLM, Las Cruces
District, January 1985.

MAP 19-2

MINERAL RESOURCE POTENTIAL*

□ Copper

*Areas of
moderate (2) mineral
potential are shown for
lands within the WSA; the
potential may extend outside
the WSA boundary. Areas of
low potential are not shown.



STALLION WSA (NM-020-040)

Proposed Action--No Action/
No Wilderness Alternative

- WSA Boundary
- BLM
- State

*State ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las Cruces
District, January 1985.

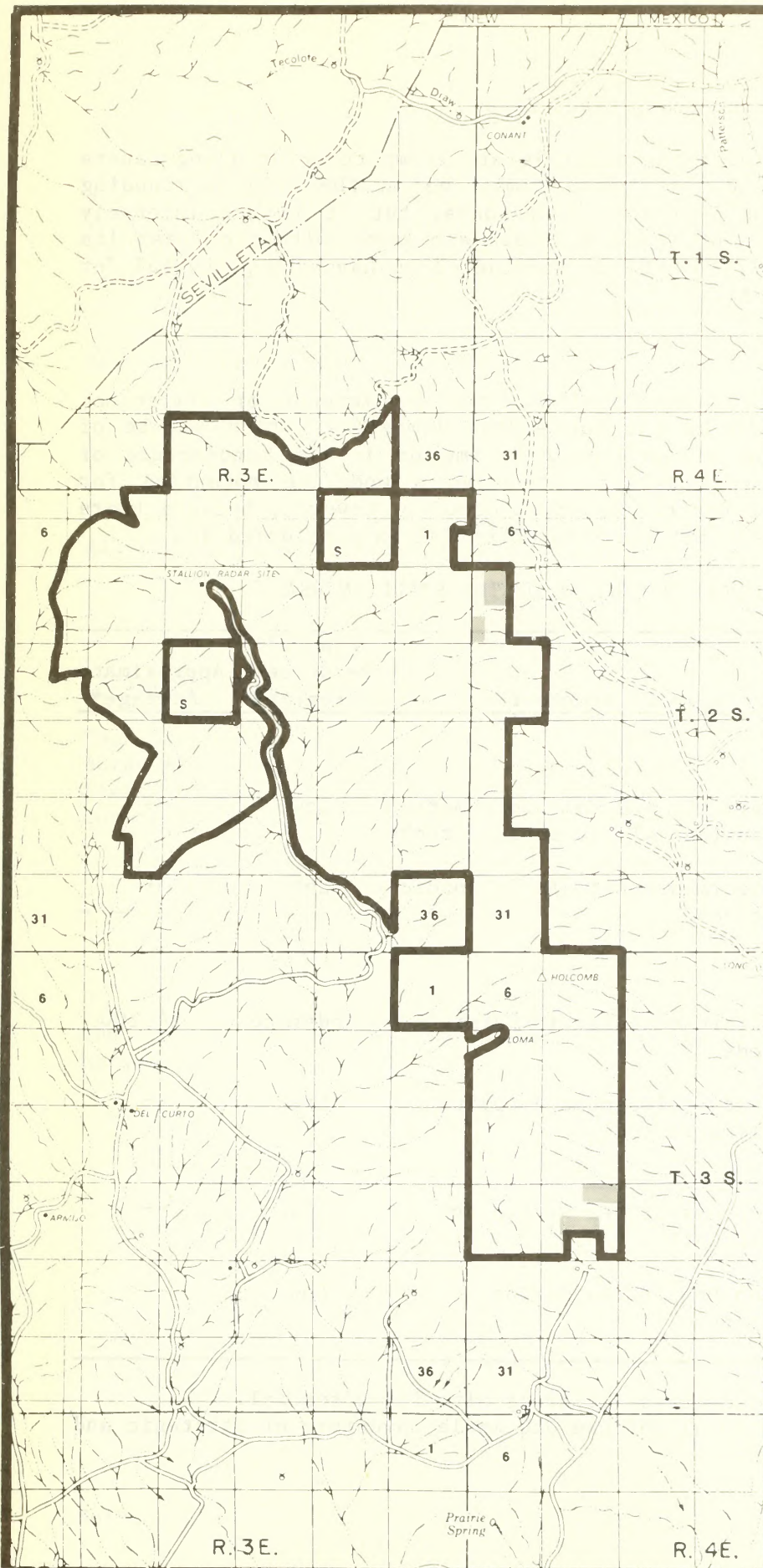
MAP 19-3

MINING CLAIMS AND MINERAL LEASES*

- Post-FLPMA Oil and Gas
Leases

FLPMA was passed October 21, 1976.

*No mining claims were recorded with
the BLM within the WSA as of
September 17, 1984.



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c. Barite, Fluorspar, Lead, Zinc

Deposits of these minerals are known to occur along faults within Precambrian rocks and the Madera limestone in the area surrounding the WSA. The WSA contains Paleozoic limestones, but it is not intensely faulted, and no occurrences of these minerals are known within or near its borders. For these reasons, the WSA is considered to have low potential for the occurrence of such deposits.

d. Limestone

The WSA has potential for the development of limestone. The WSA is partly underlain by the San Andres limestone, which may be of high enough purity for use as agricultural lime or in the manufacture of cement. These deposits are considered to have a moderate potential for development if local demand for the material occurs. However, because there has been no interest in the limestone, the potential is considered low.

MINERAL RESOURCES POTENTIAL OF THE STALLION WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Mesozoic (?) and Paleozoic marine and continental sedimentary rocks	Low	--
Uranium	Stratiform deposits in Paleozoic limestones	Low	--
Nonenergy Minerals			
Copper ^a /	Stratiform deposits in Permian red beds	Moderate	24,200
Lead ^a /, Zinc ^a /, Fluorspar ^a /, Barite	Vein and replacement deposits in Paleozoic rocks	Low	--
Gypsum	Permian evaporites within the Yeso formation	Low	--
Limestone	Permian San Andres marine limestone	Low	--

Notes: *Acreage was not calculated for areas with low potential.

^a/Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

B. Watershed

The WSA is located almost entirely in the Loma Watershed except for four sections which lie in the Storm Watershed. The WSA is composed of differing landforms which include escarpments, box canyons, rolling foothills, mountains, and badlands. The majority of soils are coarse textured with moderate to slow permeability. Approximately 92 percent of the WSA falls in a slight to moderate erosion class and 8 percent in the critical to severe erosion class. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments lie within the Stallion WSA. All four allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Tecolote Draw	15,939	2,388	9,100	57%
Bordo Atravesado	20,857	2,714	7,091	34%
Sierra Larga	12,608	2,112	4,659	37%
Coyote Spring	11,548	1,512	3,388	29%
TOTAL			24,238	

2. Ranch Management

Permittees periodically inspect and maintain developments with the use of motor vehicles. Fence maintenance is sometimes performed by horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Tecolote Draw	4 miles of fence 1 dirt tank 2 miles of pipeline with 2 drinking troughs
Bordo Atravesado	3 dirt tanks 11 miles of fence 1/5 mile of pipeline with 2 storage tanks
Sierra Larga	1 dirt tank 3 miles of fence 1 windmill
Coyote Spring	4 miles of fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

D. Timber Harvest

Approximately 94 percent (23,000 acres) of the Stallion WSA is classified as nonproductive forest land (New Mexico Forest Inventory 1975). These lands are stocked primarily with juniper, with pinyon pine as a minor component.

Because the area has never been managed for forest products, no information on stand parameters is available. However, field observation provides the basis for the following judgment of the value of forest resources within the WSA.

Site quality is low. This is apparent from the low heights of trees (10 to 18 feet) and the shallow, alkaline soils present. Wide spacing and an estimated 10-percent crown closure indicates that stocking levels are marginal for production of wood products. Poor conformation, inherent in understocked stands, also limits the usefulness of the potential product. Age class structure is unknown but is certain to be unbalanced due to the preponderance of overmature individuals and a lack of regeneration.

The potential for sawtimber production on a sustained yield basis does not exist within the WSA. Production of posts and poles is probably of marginal value due to the poor conformation of the juniper. At present, fuelwood production is considered marginal due to the lack of physical access to the majority of forested lands and the availability of alternate cutting areas (i.e., Forest Service administered land).

E. Recreation

The WSA is located within 2 hours driving time of the City of Socorro and is visible from the community and much of the Rio Grande Valley. Existing recreational use is low, primarily restricted to deer hunting during the fall.

Potential opportunities for primitive recreational use within the WSA include exploration, horseback riding, day hiking, backpacking, natural history activities such as birdwatching, rock hunting, and landscape-nature photography, and deer hunting.

The recreational use of the WSA is not expected to increase within the foreseeable future.

The Stallion WSA is within the Stallion Planning Area. In this Planning Area, ORV use is limited to designated roads and trails.

F. Education/Research

The WSA is not currently being utilized for any known educational or research purpose. There may be educational and research potential in the WSA for cultural resource studies.

G. Wildlife

Wildlife habitat could be improved through vegetation manipulation and additional water sources. However, no specific actions are planned for the area at present. The WSA has not been identified by the New Mexico Department of Game and Fish for reintroduction of any species.

H. Other--Wild Horses

The Bordo Atravesado Wild Horse Management Area lies partially within the Stallion WSA. A wild horse herd has been present in this area since at least the early 1950's.

The present herd consists of approximately 64 animals with annual productivity of about 13 percent. The herd has a balanced sex ratio and age structure appears to be normal. Levels of mortality are unknown but appear to be low. Mortality is probably related to decimating factors such as predation, accidents, and adverse weather conditions rather than welfare factors (i.e., availability of water).

Management activities have consisted of inventory, round-up, and adoption. Management objectives are to maintain and perpetuate a viable herd of 32 wild horses with stable population characteristics, and to protect and enhance the wild free-roaming nature of the animals and retain compatibility with other uses of the range.

I. Other--White Sands Missile Range (WSMR) Safety Extension Area

The Stallion WSA is located entirely within the WSMR Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper. WSMR has indicated that an increase in planned testing activities will require additional instrumentation and tracking sites in the Safety Extension Area.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

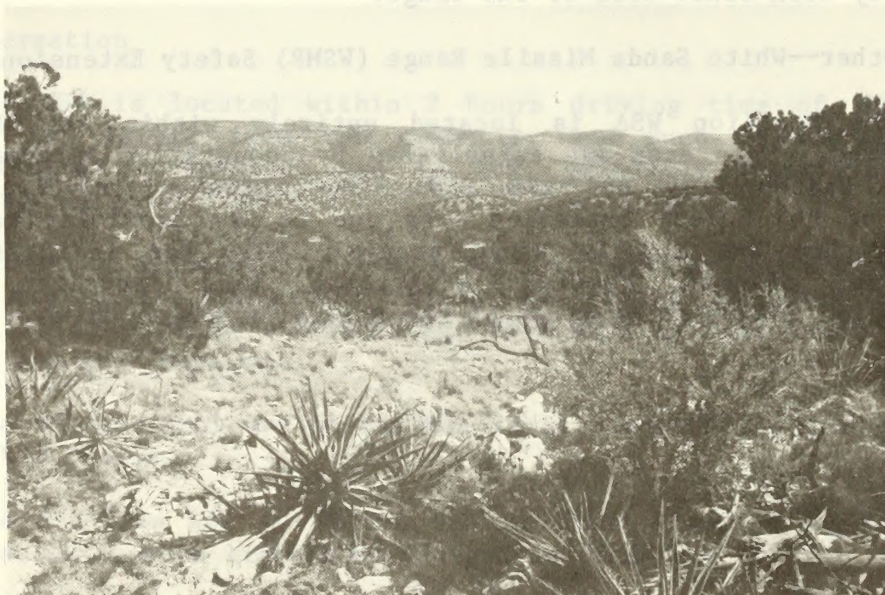
a. Naturalness

The WSA is generally natural in appearance. Intrusions are limited to 5 dirt tanks, 22 miles of barbed wire fence, 1 windmill, 2 miles of pipeline with 2 drinking troughs, 1/5 mile of pipeline with 2 storage tanks, 30 prospect pits, and 20 miles of two-track vehicle routes. In addition to these intrusions, WSMR has an electronic tracking station and a microwave reflector structure on the highest points in the Sierra Larga. Although excluded from the WSA, these intrusions are visible from a number of vantage points within the area.

The naturalness values of the WSA as a whole are not considered outstanding. However, there are area-specific exceptions within the WSA to this general assessment.

b. Solitude

The WSA is isolated, little visited, difficult to access, and rugged. The area's topographic diversity, vegetational screening, and geographic setting contribute to its outstanding solitude opportunities. The airspace over the WSA is utilized by the military for aerial training maneuvers with high performance jet aircraft. The noise associated with these maneuvers is not conducive to a quality solitude experience.



Overview of the Stallion WSA.

c. Primitive and Unconfined Recreation

The WSA can provide visitors with outstanding opportunities to experience a pinyon-juniper mountain environment suited to day hiking, deer hunting, horseback riding, and exploration. The WSA is most attractive to these recreational pursuits during the fall, winter, and spring months.

2. Special Features

The WSA supports a small herd of wild horses, which in the opinion of many persons, enrich the WSA's aesthetic and faunal resources.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Congressional designation of the WSA as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Stallion WSA lies near the northern extreme of the Chihuahuan Desert and the southern edge of the Colorado Plateau Provinces as identified in the Bailey (1976) - Kuchler (1966) Ecoregion Classification System.

Potential natural vegetation consists of 3,000 acres of grama-tobosa shrubsteppe in the Chihuahuan Desert and 21,238 acres of juniper-pinyon woodland mosaic in the Colorado Plateau. However, because of the WSA's geographic location between the Chihuahuan Desert and Colorado Plateau Provinces, these areas are not clearly distinctive. Instead, the two tend to integrate into one another to varying degrees.

b. Distance From Population Centers

Albuquerque and Las Cruces, New Mexico, identified in the 1980 census as a Standard Metropolitan Statistical Area (SMSA), are located within 4 hours driving time of the WSA. El Paso, Texas is located within 5 hours driving time of the WSA.

B. Manageability

To be recommended for wilderness designation, the Stallion WSA must be capable of being effectively managed as wilderness. Manageability is a judgment made by the BLM after considering such factors as State inholdings, valid existing rights, topography, and the overall land ownership pattern.

STALLION

Grandfathered livestock operations in the WSA are compatible with wilderness management and required access for the maintenance of existing rangeland developments and necessary ranch operations are not expected to create problems for wilderness management.

There are no existing mining claims present within the WSA. Two oil and gas leases have been issued within the WSA, but both are subject to the BLM Interim Management Policy wilderness protection stipulations.

The Stallion WSA lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Safety Extension Area must be evacuated of all human inhabitants during missile firings. The availability of the Area is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Extension Area to recover missile debris. However, no impacts of this nature have occurred within the WSA to date.

Two instrumentation sites are technically corridorred out of but surrounded by the WSA. Future expansion of existing instrumentation sites or the installation of new sites may be necessary either adjacent to or within the WSA.

The presence of the WSA within the WSMR Safety Extension Area would require special management consideration to accommodate the military's needs while preserving wilderness values and ensuring human safety. A permit system and appropriate signing would be desirable features for wilderness management. This would allow a greater degree of control of public access than presently exists and would facilitate WSMR's periodic evacuations of the area. Access to recover possible missile debris would be granted after determining the method which would least impact wilderness values. This is not expected to result in significant problems, however, because of the low probability of a missile impacting in the area.

WSMR has also stated that future test forecasts indicate increased utilization of the area. It is not possible at this time to evaluate the possible manageability problems as a result of increased military use, but because the WSA is located well within the Safety Extension Area, the possibility exists for increased manageability problems resulting from the need to expand existing instrumentation sites and an increase in the probability of missile impacts.

Inholdings within the WSA include 1,280 acres of State land. Acquisition of these inholdings, through voluntary exchange, would enhance manageability.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has generally supported wilderness designation of the Stallion WSA. Reasons cited have concentrated on the WSA's remoteness coupled with its naturalness and solitude values.

Opposition to designation has been intense from several grazing permittees who feel they would be affected by wilderness status. Resource conflicts with grazing use, lack of wilderness characteristics, and conflicts with the White Sands Missile Range (WSMR) use of the Safety Extension Area were most often cited as reasons against wilderness designation.

WSMR personnel expressed concern that designation of Stallion WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 18 letters were received. Ten respondents supported wilderness designation for the Stallion WSA. Reasons for this support included the wilderness values of the area as well as the topographic relief which results in scenic vistas and wildlife values. A number of respondents questioned the BLM's assessment of management difficulties resulting from the need to periodically evacuate the area for safety reasons.

Eight respondents were opposed to wilderness designation of the Stallion WSA. Mineral values including the geologic favorability for oil and gas, limestone, and copper, were most often cited as reasons. It was also noted that the biological features of the WSA are common to the region.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to energy minerals, water, soils, vegetation, wildlife, visual, cultural, air, recreation, education/research, timber harvest, wild horses, and the WSMR Safety Extension Area are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not protected by the BLM Interim Management Policy.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/ No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for this WSA are the quality of the area's wilderness values and the area's moderate copper potential. Although the impacts on copper resources are not considered significant, this issue is analyzed in detail because mineral potential is an issue of Statewide concern.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 24,238 acres of public land within the Stallion WSA would be recommended suitable for wilderness designation. (See Map 19-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. Wilderness management of the area would maintain the area's low quality naturalness, outstanding opportunities for solitude, and outstanding opportunities for dayhiking, deer hunting, and horseback riding.

2. Impacts to Copper Resources

Although the entire Stallion WSA (approximately 24,200 acres) has moderate potential for copper, there are no existing mining claims in the area. It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Stallion WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

Although existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for locatable minerals outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full copper potential of the area could not be assessed. However, based on current information, wilderness designation would not have significant impacts on copper resources in the WSA because most deposits of copper in the area around the WSA tend to be small and uneconomically feasible to mine.

STALLION

3. Impacts to Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be moderate.

Wilderness designation would not result in the reduction of existing livestock stocking levels. Permits would be required for vehicle access to maintain 5 dirt tanks, 1 windmill, 2 storage tanks, and 1/5 mile of pipeline.

Approximately 2 miles of pipeline with 2 drinking troughs, which were permitted under the BLM Interim Management Policy, on the Tecolote Draw allotment would be removed. This would result in poorer distribution of cattle on the allotment.

B. No Action/No Wilderness (Proposed Action)

Under the No Action/No Wilderness Alternative, the entire 24,238 acres of public land within the Stallion WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and possibly mineral exploration and woodcutting. Expansion of the two existing White Sands Missile Range facilities coridored out of, but surrounded by, the WSA may occur as well as the construction of new facilities and access roads to support WSMR activities. An increase in military flights over the area may also occur in the future. Management actions such as the installation of rangeland developments and watershed control structures would also occur.

1. Impacts to Wilderness Values

The wilderness values of the WSA would not be provided with long-term Congressional protection. Vehicular access and the probable future uses of the area could reduce wilderness values in the long-term.

2. Impacts to Copper Resources

There would be no impacts to copper resources under this alternative. The area would remain open to mining claim location. Mining activities for locatable minerals would be regulated under the Surface Management Regulations (43 Code of Federal Regulations 3809) to prevent unnecessary and undue degradation.

3. Impacts to Livestock Grazing

Approximately 2 miles of pipeline with 2 drinking troughs, which were permitted under the BLM Interim Management Policy, on the Tecolote Draw allotment would not be removed. There would be no impacts to livestock grazing.

APPENDIX 20

VERANITO WSA (NM-020-035)

I. GENERAL DESCRIPTION

A. Location

The Veranito Wilderness Study Area (WSA) lies immediately east of the floodplain of the Rio Grande and 4 miles north-northeast of the community of Socorro within Socorro County, New Mexico.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Lemitar and Mesa del Yeso, New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours, 40° to 50°F, and moderately cold at night, 15° to 30°F. Spring and fall temperatures tend to be mild. The spring season is typically accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is dominated by mesa benchlands cut by numerous arroyos. The drainages are not large, with arroyo depth ranging from 20 to 200 feet. The arroyos generally run northeast to southwest and terminate in the Rio Grande floodplain. A series of low-lying, mountainous hills form the eastern boundary of the WSA. The WSA is bound on the northwest by the floodplain of the Rio Grande. Elevations range from 4,600 feet to 5,400 feet with a maximum relief of 800 feet.

C. Land Status

The WSA contains 7,206 acres of public land. There are no private or State inholdings within the area. (See Map 20-1 for land status within the WSA boundary.)

Approximately 796 acres of the Veranito WSA are located within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper.

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

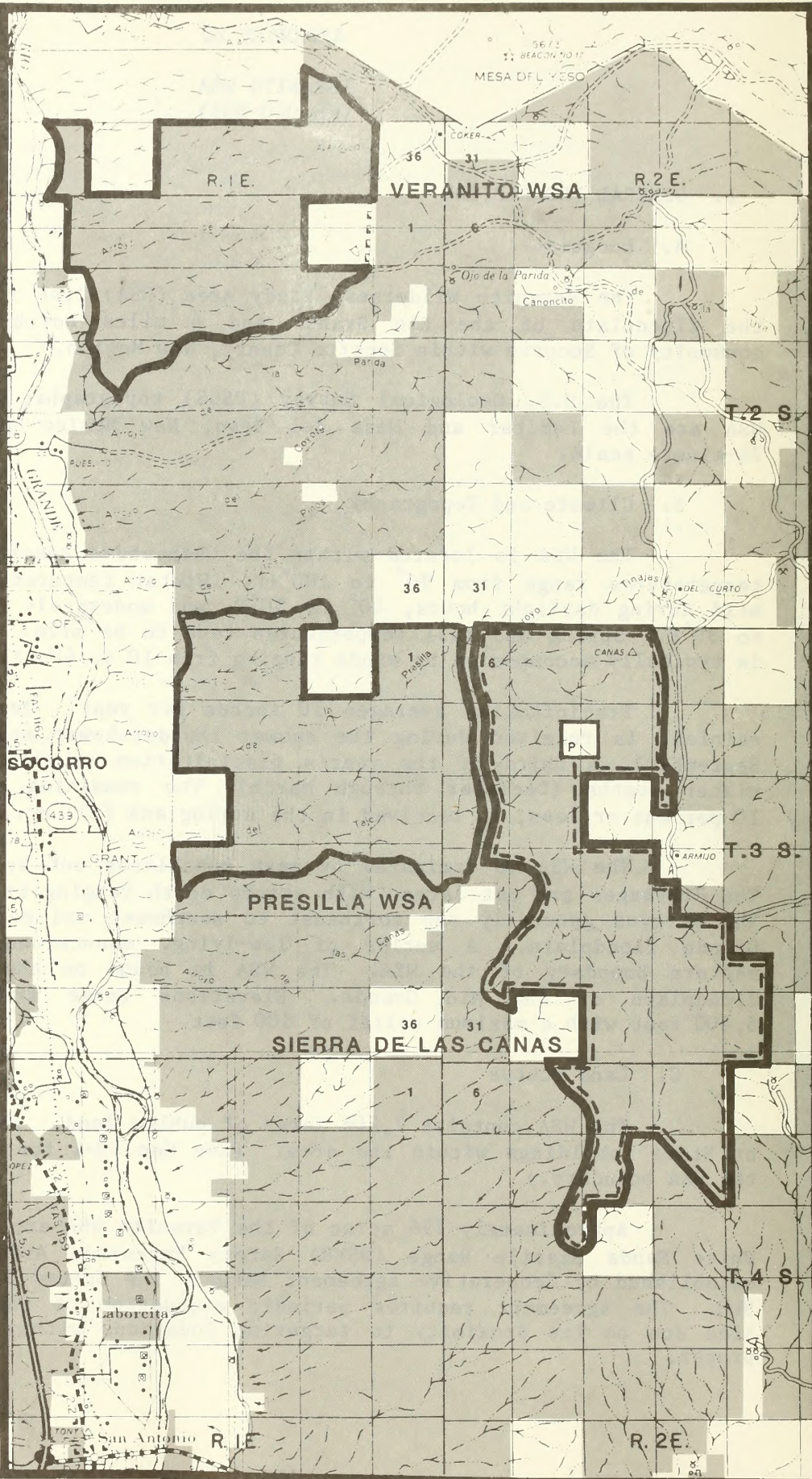
Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-1

MAP 17-1

MAP 20-1

LAND STATUS



D. Access

Primary legal access to the WSA is provided by Johnson Hill Road (County Road 146). This road is maintained by the County and is suitable for use by two-wheel drive vehicles.

E. Proposed Action, Alternatives, and Issues

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

All Wilderness	No Action/No Wilderness (Proposed Action)
°Manage 7,206 acres as wilderness.	°Manage 7,206 acres without wilderness protection.
-Close 5 miles of vehicle trails.	-Vehicle use would be allowed to continue.
-Require permits for vehicular access to maintain 1 dirt tank.	-Access to rangeland developments on roads and trails would be unregulated.
-Current levels of authorized grazing use would be maintained.	-Current levels of authorized grazing use would be maintained.
-7,206 acres would be closed to energy minerals leasing. The closed area includes 1,100 acres with high potential and 6,100 acres with moderate potential for geothermal.	-7,206 acres would be open to energy minerals leasing, mining claim location, and mineral materials sales.
-7,206 acres would be closed to mining claim location. The closed area includes 4,300 acres with moderate potential for uranium.	-Exploration activities could occur for geothermal resources or uranium.
-7,206 acres would be closed to mineral material sales. The closed area includes 450 acres with moderate potential for sand and gravel.	
-Reasonable access would be granted to WSMR personnel to recover missile debris which might impact in the area.	-Access would be granted to WSMR personnel to recover missile debris which might impact in the area.
-Fencing and prescribed burns could be carried out as proposed in the Rio Grande Wildlife Habitat Management Plan (HMP) if the projects would enhance wilderness values.	-Fencing and prescribed burns could be carried out as proposed in the Rio Grande Wildlife HMP.

SUMMARY OF SIGNIFICANT IMPACTS

Alternatives by WSA/Acreage	Major Environment Issues Wilderness Values
All Wilderness (7,206 acres)	Wilderness protection would maintain the area's existing low quality natural values, outstanding opportunities for solitude, special cultural features, and 415 acres of riparian habitat (cottonwood bosque).
No Action/No Wilderness (7,206 acres) (Proposed Action)	Wilderness values would not receive long-term Congressional protection. The area would probably retain its naturalness, outstanding opportunities for solitude, and special features in the short-term. Mineral exploration activities could degrade wilderness values in the long-term.

II. EXISTING RESOURCES

A. Geology

The Veranito WSA is located within the Socorro trough, a faulted tectonic depression filled with poorly-consolidated valley-fill deposits and forming a part of the Rio Grande rift. Records of past earthquakes and pediment surfaces offset by fault scarps indicate that tectonic forces are still active within the rift. Geophysical evidence indicates that a portion of an extensive sill-like magma body, occurring at depths of 18-22 kilometers, underlies the WSA.

Surface rocks in the WSA include mid-Tertiary volcanics of the Datil formation, late Tertiary valley-fill sediments of the Santa Fe formation, and Quaternary alluvium.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

There are no developed ground water sources within the WSA. Developed sources adjacent to the WSA are used mainly for livestock watering purposes. Ground water quality is highly variable in the vicinity of the WSA as water is drawn from shallow and deep aquifers. Shallow ground water is often highly mineralized due to seepage of surface water containing high total dissolved solids. Ground water from deeper bedrock aquifers, usually limestone, is also often high in dissolved solids. Most ground water is suitable for livestock, and in some areas, for human consumption.

C. Soils

The majority of the Veranito WSA consists of rolling ridges with deep gravelly coarse textured soils. Rock outcrops of a hard volcanic tuff occur on many ridge tops. Swales and gently sloping alluvial fans on the east side contain deep loamy soils. Soils along the west boundary of the WSA are strongly influenced by the Rio Grande. On the floodplain, soils are stratified alluvial deposits and often have a high water table and high salt content. Just above the floodplain, there are small areas of deep sandy soils derived from material blown out of the Rio Grande channel and from the Santa Fe formation.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: creosote, desert grassland, riparian, and mesquite.

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Creosote dominates the area, with approximately 88 percent of the WSA classified under this vegetation type. Creosote occurs in all of the upland sites in the WSA and is usually concentrated on alluvium and desert pavement. Grass species associated with this type include fluffgrass, burrograss, black grama, bush muhly, galleta, and spike dropseed. Other plant species include broom snakeweed, prickly leaf dogweed, desert willow, one-seed juniper, mesquite, fourwing saltbush, and Apacheplume.

Approximately 350 acres in the northeastern corner of the WSA are classified as desert grassland. The dominant plant species is burrograss which makes up 73 percent of the composition. Other species present are sand dropseed, galleta, and broom snakeweed.

The northwestern corner of the WSA, which is adjacent to the Rio Grande, includes 415 acres of riparian vegetation. Although the dominant cottonwood is Fremont cottonwood, some narrow-leaf cottonwood is known to occur within the area. Other plant species occurring in this vegetation type include salt cedar, willows, salt grass, and Russian olive. Among the annuals present are Russian thistle and tansy mustard, which are poisonous plants.

The mesquite vegetation type covers approximately 100 acres and occurs immediately east of the riparian community. This type contains some dense stands of mesquite interspersed with alkali sacaton and thickets of wolfberry.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of three Federally-listed and one State-listed species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Two Standard Habitat Sites (SHS's) have been identified within the WSA. These SHS's support 213 wildlife species, which include 27 mammal species, 41 reptile and amphibian species, and 145 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file at the Socorro Resource Area Office.

Big game indigenous to the WSA are mule deer. Estimated deer densities are low, less than two deer per square mile. Highest concentrations are in the riparian zone adjacent to the Rio Grande and in the arroyos.

The most common predator is the coyote. Bobcat and gray fox also inhabit the WSA and raccoon occur in the riparian zone. Porcupine,

desert cottontails, black-tailed jackrabbits, white-throated woodrats, deer mice, and ground squirrels are common.

Typical bird species include dove, quail, red-tailed hawks, sparrowhawks, horned larks, ravens, and numerous songbirds.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The Fish and Wildlife Service furnished the BLM information about three Federally-listed endangered animal species which may occur in the WSA: the bald eagle, the American peregrine falcon, and the whooping crane. These species were included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat for bald eagle and peregrine falcon, and there are no current or historically occurring eagle or falcon eyries within the WSA. The WSA does not provide any potential nesting habitat for the whooping crane. Potential habitat exists for supporting migrating individuals of all three species due to a sufficient food base and water availability in the Rio Grande Valley.

F. Visual

The WSA is a series of undulating parallel ridges cut by numerous shallow arroyos interspersed with high hills and a low elevation east-facing escarpment. Topographic relief is not dramatic and the overall landscape character is considered monotonous and unspectacular.

The only exception to the WSA's generally low scenic values is the cottonwood bosque riparian area. From mid-spring through late fall, this area's visual resource values are considered high due to the structure, contrast, and inherent beauty provided by a cottonwood forest which borders a stark desert landscape.

G. Cultural

The cultural resource values of the WSA are diverse. They range from early pithouse sites to multi-room pueblos. Presently, only three sites are recorded within the boundaries of the WSA. However, many isolated artifacts have been recorded from numerous locations within the area, which suggest the WSA was utilized extensively by Native Americans for subsistence purposes. This conclusion is reinforced by the fact two significant pueblo sites lie within close proximity to the WSA. Further, 89 recorded sites which range temporally from early pithouse (1000 B.C.) to currently occupied historic structures are located within a 10-kilometer radius of the WSA. This vast time range suggests the importance of the cultural resources within the region which surrounds the Veranito WSA. The probability for the occurrence of unrecorded cultural sites within the WSA is high.

H. Air

Generally, the quality of air within the Veranito WSA is good. The air quality in the WSA does not exceed the State or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Resources

Mineral resources potential of the lands within the WSA is shown on Map 20-2 and Map 20-3. The locations of lands under mineral lease are shown on Map 20-4.

1. Energy Minerals

As of December 1, 1984, there were three post-Federal Land Policy and Management Act (FLPMA) oil and gas leases in the WSA.

a. Oil and Gas

Paleozoic rocks favorable for the generation of oil and gas probably underlie the WSA, but intense faulting precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The WSA is located in the Socorro Peak Geothermal Leasing Area, about 2 miles from the Socorro Known Geothermal Resource Area.

Indications are that the WSA is underlain by a deep sill-like magma body, and is within 3 miles of a shallow magma chamber. Permeable reservoirs and impermeable cap rocks are probably present at depth which suggests that significant volumes of hot fluids may be trapped beneath the ground. For these reasons, the southwestern portion of the WSA is considered to have high potential for the discovery of geothermal resources. The remainder of the WSA has moderate potential.

c. Uranium

The Popotosa and Santa Fe formations could be hosts for roll-type stratabound uranium deposits because both formations contain uranium-rich volcanic source rocks and permeable horizons, and may contain reductants such as organic matter or reducing geothermal fluids. The surface of the WSA is partly underlain by the Santa Fe formation and may be underlain by the Popotosa formation. The WSA is considered to have a moderate potential for the discovery of uranium.

2. Nonenergy Minerals

As of September 17, 1984, there were no mining claims recorded with BLM in the WSA.

**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-2

MAP 17-2

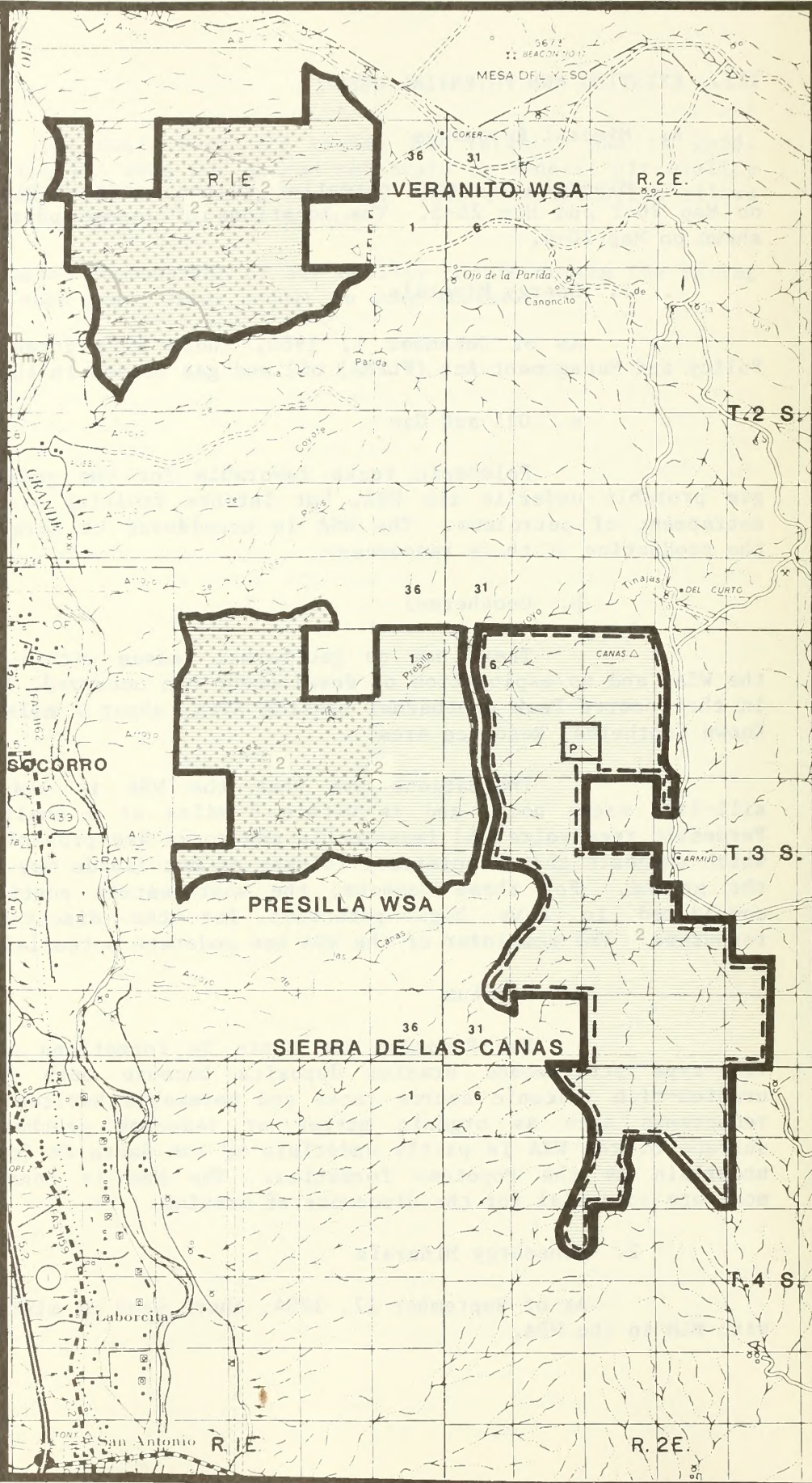
MAP 20-2

ENERGY MINERAL
RESOURCE POTENTIAL*

Geothermal

Uranium

*Areas of high (1) and
moderate (2) mineral
potential are shown for
lands within the WSA; the
potential may extend outside
the WSA boundary. Areas of
low potential are not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

Source: USDI BLM, Las
Cruces District, January
1985.

MAP 16-3

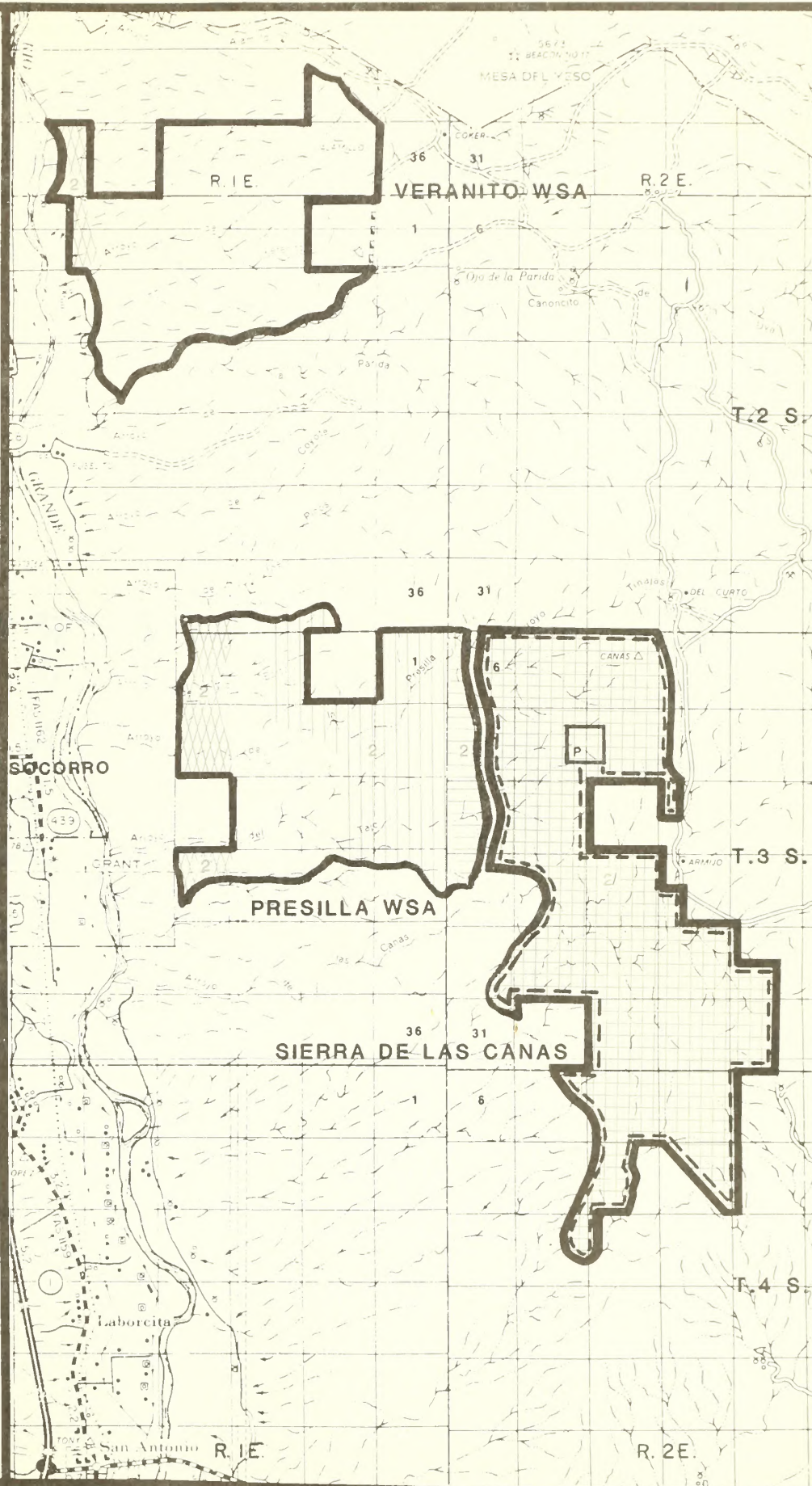
MAP 17-3

MAP 20-3

**NONENERGY MINERAL
RESOURCE POTENTIAL***

- Fluorspar, Barite
Lead, Zinc,
- Copper
- Sand and Gravel

*Areas of moderate (2)
mineral potential are shown
for lands within the WSA;
the potential may extend
outside the WSA boundary.
Areas of low potential are
not shown.



**MAP 16
PRESILLA WSA
(NM-020-037)**

Proposed Action--
No Action/No Wilderness

**MAP 17
SIERRA DE LAS
CANAS WSA
(NM-020-038)**

Proposed Action--
Amended Boundary

**MAP 20
VERANITO WSA
(NM-020-035)**

Proposed Action--
No Action/No Wilderness

- WSA Boundary
- - - Amended Boundary
- BLM
- Private

*Private ownership is
identified only inside the
WSA boundary.

Scale: 1/2 inch=1 mile

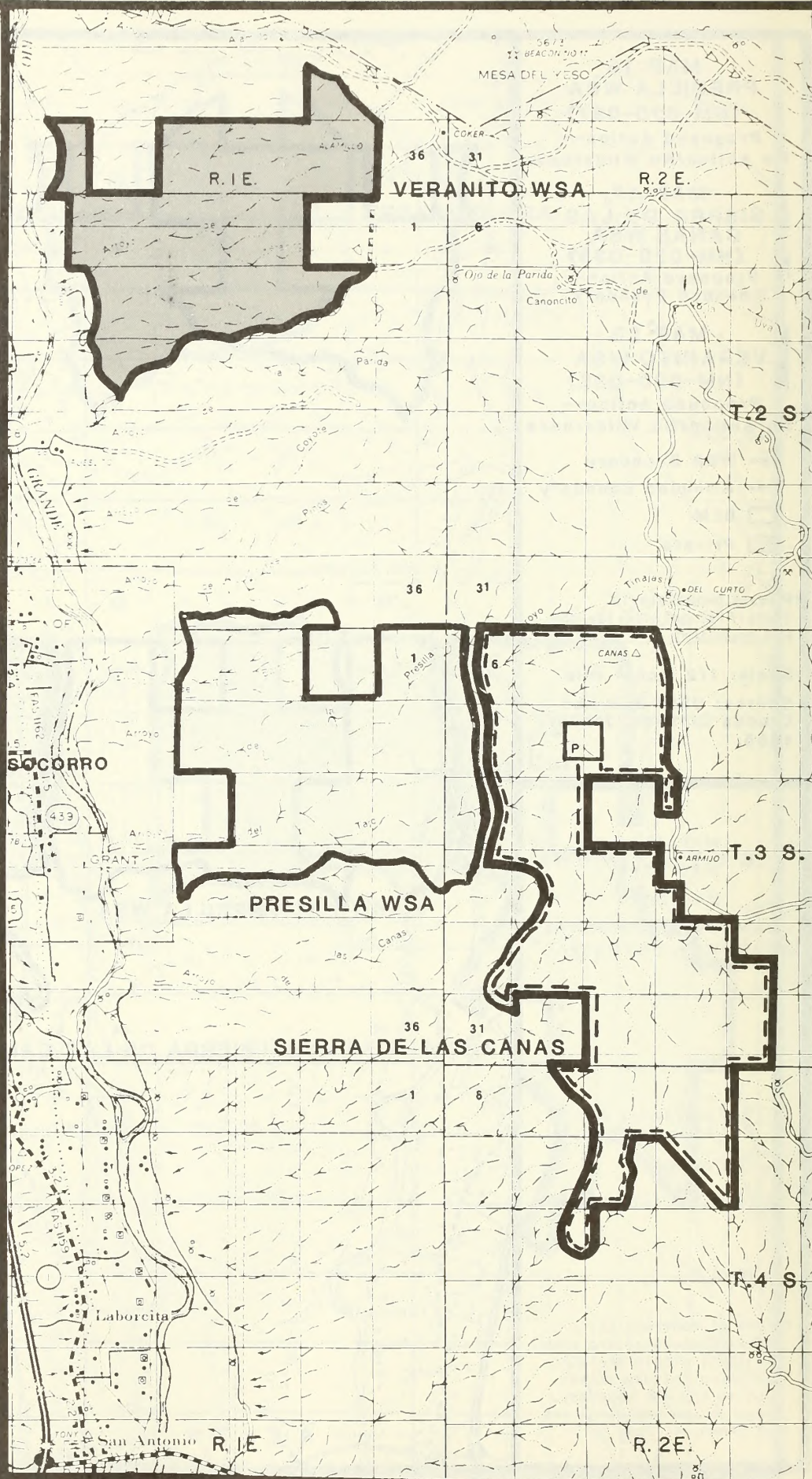
Source: USDI BLM, Las
Cruces District, January
1985.

**MAP 20-4
MINING CLAIMS AND
MINERAL LEASES***

- Post-FLPMA Oil
and Gas Leases

FLPMA was passed October 21,
1976.

*No mining claims were
recorded with the BLM within
WSA as of September 17, 1984.



a. Manganese, Silver, Kaolin

There are known occurrences of these minerals associated with Datil volcanics in various areas outside of the WSA. The WSA is partly underlain by Datil volcanics, but does not have any known mineralization. The potential for the discovery of these minerals is considered to be low.

b. Sand and Gravel

Sand and gravel occur in the Santa Fe formation and Quaternary alluvium underlying the WSA. The presence of extensive deposits, proximity to population centers, and the accessibility of the deposits suggest that sand and gravel within the WSA could be used in local construction projects. The WSA is considered to have moderate potential for the development of these resources.

MINERAL RESOURCES POTENTIAL OF THE VERANITO WSA

Commodity	Geologic Environment	Mineral Resources Potential	Approximate Acreage*
Energy Minerals			
Oil and Gas	Paleozoic marine and continental sedimentary rocks	Low	--
Geothermal	Active igneous intrusions along the Rio Grande rift	High Moderate	1,100 6,100
Uranium	Stratiform deposits within Tertiary basin fill	Moderate	4,300
Nonenergy Minerals			
Manganese ^a / Silver ^a / Kaolin	Altered Datil volcanics	Low	--
Sand and Gravel	Santa Fe formation and Quaternary alluvium	Moderate	450

Notes: *Acreage was not calculated for areas with low potential.
^a/Listed on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

B. Watershed

The Veranito WSA is located entirely within the Parida watershed. The watershed is classified as a moderate erosion area and includes several different land types. Rolling ridges of gravelly soils occupy most of the WSA. While sheet and gully erosion undoubtedly contributes sediment

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directly to the Rio Grande, the actual quantities are not known. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments lie within the Veranito WSA. All three grazing allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Veranito	5,028	445	4,216	83%
Pueblito Community	3,504	240	620	17%
Parida	11,021	1,248	2,370	22%
TOTAL			7,206	

2. Ranch Management

Permittees periodically inspect and maintain as necessary the dirt tank, fences, pipelines and associated developments through the use of motor vehicles. Vehicle access for maintenance of the Veranito pipeline is generally restricted to arroyos.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Veranito	6 miles of boundary fence 5½ miles of interior fence 1 dirt tank 2¾ miles of pipeline
Pueblito Community	1½ miles of boundary fence
Parida	3 miles of boundary fence 1 mile of interior fence 3/10 mile of pipeline

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

The Veranito WSA is within 15 minutes driving time of the City of Socorro and is adjacent to the community of Lemitar in the Rio Grande Valley. This portion of the valley is rapidly developing. Existing recreational use of the WSA is low.

The WSA has potential for primitive recreational use. Activities include exploration, horseback riding, day hiking, and deer hunting.

The recreational use of the WSA is expected to increase somewhat in future years because of the WSA's ease of access and proximity to the community of Socorro.

E. Education/Research

The Veranito WSA is not currently being utilized for any known educational or research project. Education and research potential for cultural resources and riparian studies may exist.

F. Realty Actions

Socorro Electric Cooperative, Inc. was granted a right-of-way (ROW) to construct a wooden pole 14.4kv powerline to service the Chevron Pumping Station in T. 2 S., R. 1 E., Section 2. This ROW, in combination with the Johnson Hill Road, defines the southern boundary of the WSA.

G. Wildlife

The cottonwood bosque riparian area of the WSA is included in the Rio Grande Wildlife Habitat Management Plan (BLM 1982). Planned actions for the area include fencing and prescribed burns. The WSA has not been identified by the New Mexico Department of Game and Fish for the reintroduction of any species.

H. Other--White Sands Missile Range (WSMR) Safety Extension Area

Approximately 796 acres of the Veranito WSA lie within the WSMR Safety Extension Area and may be subject to occasional impacts from missile hardware or debris. The military periodically evacuates residents of the Area to ensure their safety.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The WSA appears to be affected primarily by the forces of nature; the imprint of man is substantially unnoticeable. Human impacts in the WSA include approximately 17 miles of barbed wire fencing, 3 miles of buried plastic pipeline, and one dirt tank. The quality of the WSA's natural appearance is not high. Its relatively small size combined with rolling topographic relief and little vegetative screening, accentuates the human intrusions present within the WSA to an undesirable degree. This is especially true in the case of two-track vehicle routes and the buried water pipelines present in the WSA.

b. Solitude

The numerous arroyos which cut the benchlands and the cottonwood bosque in the northwest portion of the WSA provide screening and offer outstanding opportunities for solitude.

The gently rolling creosote desert landscape which characterizes much of the WSA offers little topographic or vegetative screening and opportunities for solitude are considered less than outstanding in these areas of the WSA.

c. Primitive and Unconfined Recreation

During the wilderness inventory, it was determined that the WSA was lacking in outstanding recreational opportunities. The WSA can provide visitors with opportunities to experience a desert environment suited to day hiking, deer hunting, horseback riding, and exploration. The area is most attractive to these recreational pursuits during the fall, winter, and spring months.

The proximity of the WSA to the community of Socorro and its ease of access are important recreational assets. In terms of driving time, the WSA is within 15 minutes of Socorro.

2. Special Features

The WSA's known special features include its cultural resources and its cottonwood bosque.

A significant Piro Indian pueblo is located on the area's boundary and an unusual petroglyph site is present within the WSA. The potential for presently undocumented cultural resource sites is high for the area.

The WSA's 415 acres of cottonwood bosque environment comprises one of the largest publicly-owned tracts of this ecosystem type in the Middle Rio Grande Valley. Due to the rapid development which is occurring throughout the valley and the conversion of most of the valley's once extensive cottonwood stands to the exotic riparian tree species (salt cedar), the Veranito WSA's cottonwood bosque takes on an importance which outweighs its relatively small size.

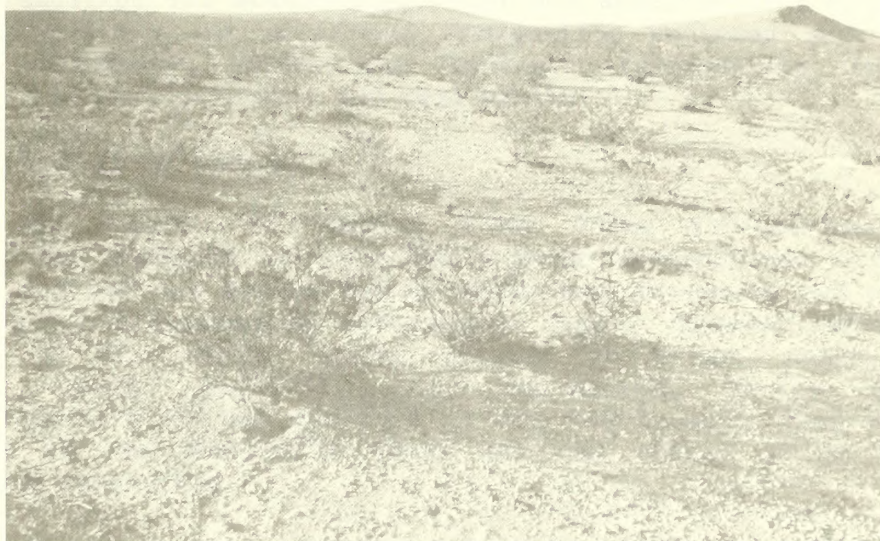
3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness and renewable resource values than would administrative designations available to the BLM.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Veranito WSA as being in the Chihuahuan Desert Province. The potential natural vegetation of the WSA is grama-tobosa shrubsteppe.



Typical landform and vegetation of the WSA.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located less than 5 hours driving

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time of the WSA. The WSA is approximately 2 hours driving time from Albuquerque, New Mexico, 3 hours from Las Cruces, New Mexico, and 4 hours from El Paso, Texas.

B. Manageability

The Veranito WSA is manageable as wilderness. Two factors which affect the capability of the Veranito WSA to be managed as wilderness include the WSMR Safety Extension Area and unauthorized off-road vehicle (ORV) use.

A portion of Veranito WSA lies within the WSMR Safety Extension Area. This Safety Extension Area is used as a safety zone in support of test programs conducted at WSMR. The area must be evacuated periodically during missile firings. The Safety Extension Area is required for an indefinite period of time to support future testing programs at WSMR. WSMR also requires reasonable access to the area to recover missile debris. However, no missile impacts have occurred within the WSA to date. The need to evacuate the area and to have reasonable access to recover missile debris would complicate wilderness management of the WSA.

There is a possibility of continued unauthorized ORV use in the WSA. The Veranito WSA is close to the community of Socorro and readily accessible to hunters and 4-wheel drive enthusiasts. Closure of existing trails in the WSA would be difficult to enforce. Unauthorized ORV use could impact the area's naturalness and the opportunities for solitude in part of the WSA.

V. CONSULTATION AND COORDINATION

A. Public Involvement Overview

Public involvement in the wilderness inventory and study process has generally indicated support for designation of the Veranito WSA as wilderness. Reasons cited have revolved around the WSA's close proximity to the community of Socorro and the Rio Grande Valley.

Opposition to wilderness designation came from area permittees. Generally, permittees feel wilderness designation would complicate ranch operations and narrow rangeland management opportunities.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Veranito WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

During the public comment period on the Draft Environmental Assessment Socorro District Wilderness (BLM 1983), 17 letters were received on the Veranito WSA. Ten of the letters were opposed to wilderness designation while seven favored designation for the area. Those who favored designation of the WSA disagreed with the BLM's assessment of manageability problems resulting from the WSMR Safety Extension Area. It was also noted that the WSA's proximity to the community of Socorro enhanced its value as wilderness.

Opposition to wilderness designation centered around the area's lack of wilderness values and geologic favorability for geothermal resources, uranium, zeolites, and rare earths.

B. Summary of Scoping

The Summary of Scoping table lists alternatives and issues considered for analysis in this WAR. These alternatives and issues were raised by BLM and the public during wilderness inventory and preparation of the District's Environmental Assessments (EAs). However, unless otherwise discussed in the table, issues related to water, soils, vegetation, wildlife, visual, cultural, air, recreation, realty actions, and education/research are not analyzed in this WAR because these resources were considered in the District's Final EAs and little or no environmental impacts were identified.

SUMMARY OF SCOPING

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Expanding the WSA	This was not considered further because it would require consideration of lands not designated for wilderness study and lands not managed under the BLM Interim Management Policy.
An Alternative Boundary	There were no potential boundary adjustments identified which balanced resource conflicts and wilderness values.

Issues Raised and Set Aside	Reasons for Not Conducting a Detailed Analysis
Saleable Minerals (Sand and Gravel)	Although there are 450 acres with moderate potential for sand and gravel in the WSA, the impacts on this resource would not be significant because similar materials are readily available elsewhere.
Livestock Grazing	No significant impacts to livestock grazing were identified; however, this issue will be discussed because of Statewide interest.

Alternatives Selected for Detailed Analysis	Reasons
All Wilderness	Required by the BLM Wilderness Study Policy.
No Action/ No Wilderness (Proposed Action)	Required by the BLM Wilderness Study Policy.

Issues Selected for Detailed Analysis

The primary issues for this WSA are the quality of the area's wilderness values and mineral potential. Existing rangeland developments diminish the area's apparent naturalness. The WSA lacks outstanding opportunities for primitive or unconfined recreation.

Although no significant impacts to geothermal and uranium were identified, these resources are analyzed because of the WSA's high and moderate potential, and because mineral potential is a Statewide issue.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 7,206 acres of public land within the Veranito WSA would be recommended suitable for wilderness designation. (See Map 20-1 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

1. Impacts to Wilderness Values

Wilderness designation would provide long-term Congressional protection for the low quality natural values, outstanding opportunities for solitude, and special cultural and riparian habitat features present in the area. This long-term protection and the management would ensure continued maintenance of existing wilderness values.

2. Impacts to Geothermal Resources and Uranium

Despite high potential for geothermal resources on 1,100 acres and moderate potential on 6,100 acres in the Veranito WSA, there has been no exploration or drilling in the area. It is assumed that after wilderness designation, no new leases would be issued. If a discovery were made in an area adjacent to the WSA, geothermal resources would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the geothermal potential in the WSA. However, the impacts of wilderness designation on geothermal resources would not be significant because the Veranito WSA is only a small part of a surrounding extensive area of equal geothermal potential. Areas closer to the community of Socorro would prove much more valuable for geothermal exploration and development.

Although an area of 4,300 acres in the Veranito WSA has moderate potential for uranium, no mining claims have been located in the area. It is assumed that after wilderness designation, the location of new mining claims would not be allowed. However, development work, extraction, and patenting of mining claims existing in the Veranito WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

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Although any existing valid claims could be explored and developed after wilderness designation, the mining companies could incur additional costs of operation depending on restrictions on acceptable mining methods and the type and location of acceptable access. Since additional exploration for uranium outside of existing claim boundaries would also be prohibited, the minerals industry could be affected in the long-term since the full potential of the area could not be assessed. However, the impacts on uranium exploration and development would not be significant because current information indicates that most deposits of the type expected in the Veranito WSA tend to be small and uneconomical to mine. In addition, there are large areas of equal uranium potential in the State.

3. Impacts to Livestock Grazing

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be minimal.

Livestock grazing would continue. Existing rangeland developments would not be removed so long as they are necessary to ranch operations. Access to one dirt tank would be permitted for necessary maintenance.

B. No Action/No Wilderness (Proposed Action)

Under the No Action/No Wilderness Alternative, the entire 7,206 acres of public land within the Veranito WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

1. Impacts to Wilderness Values

The wilderness values of the Veranito WSA would not receive long-term Congressional protection. Although the Veranito WSA would probably retain its wilderness values in the short-term, management of the area as specified in existing land use plans would be subject to administrative change in the long-term. Degradation of the area's existing low quality naturalness, outstanding opportunities for solitude, and special features could result from new rangeland developments, geothermal exploration, or uranium exploration.

2. Impacts to Geothermal Resources and Uranium

There would be no impacts to geothermal resources or uranium under this alternative. Geothermal leasing would continue. Mining claims could be located for uranium. Locatable mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 Code of Federal Regulations 3809).

3. Impacts to Livestock Grazing

There would be no impacts to livestock grazing.

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